For producers of Sand and Gravel, Crushed Stone, Cement, Lime, Gypsum, and other nonmetallic minerals

APRIL 1956

PIT and QUARRY

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Aerial View of the 5,000,000 Ton Port Inland, Mich., Crushed Stone Plant of Inland Lime & Stone Co.

Longer Lasting!

Ludlow-Saylor

WOVEN WIRE SCREEN

"Super-Loy" screens have much greater resistance to wear—cut replacement, downtime and maintenance costs—retain their accurate openings—lower your cost-per-ton!

Immediate Shipment From Stock
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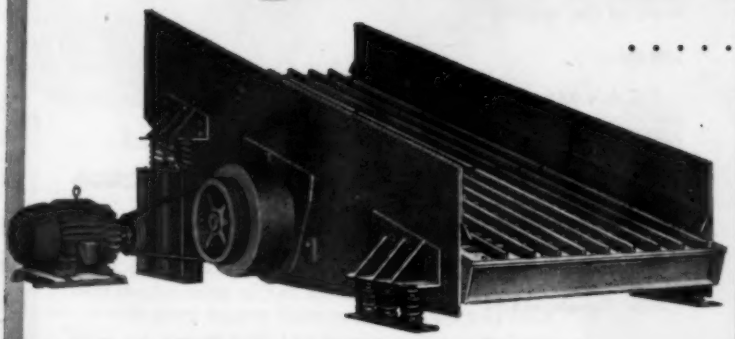
Before you buy a heavy-duty scalper...

ask yourself these 4 questions



Has it the strength to take 40-in. boulders dropped from a feeder?

2 **Can it deliver high output?**

3 **Does it provide efficient separation?**

4 **Is it designed for trouble free operation?**

Link-Belt heavy-duty scalping screen effectively keeps fines out of primary crushing circuit.

The answer to all 4 is YES-- when you choose this proved LINK-BELT Vibrating Screen

Here's how these Link-Belt Vibrating Screens live up to the four major demands of heavy-duty scalping.

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

pit and quarry

THE BASIC MAGAZINE OF A BASIC INDUSTRY

APRIL 1956—vol. 48, no. 10

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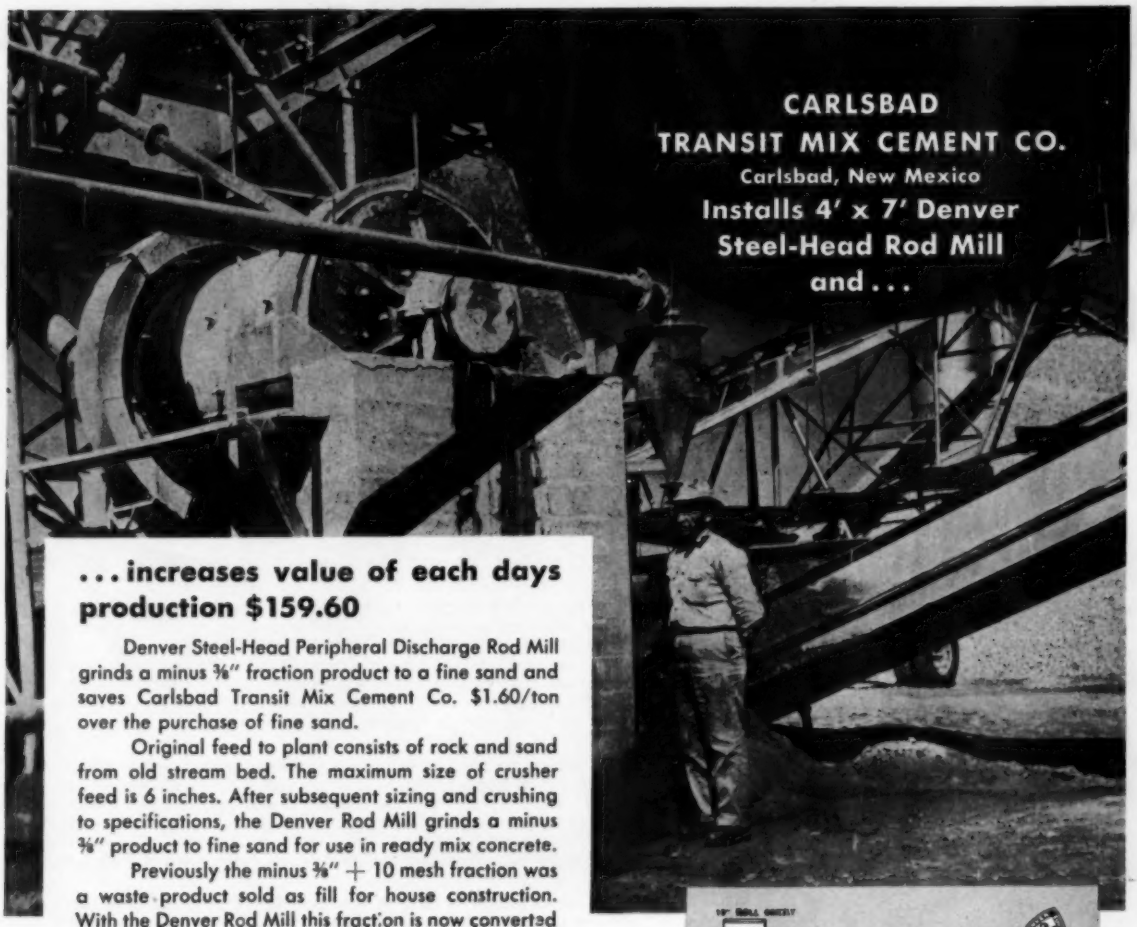

CARLSBAD TRANSIT MIX CEMENT CO.

Carlsbad, New Mexico

Installs 4' x 7' Denver Steel-Head Rod Mill and . . .

. . . increases value of each days production $159.60

Denver Steel-Head Peripheral Discharge Rod Mill grinds a minus ⅜" fraction product to a fine sand and saves Carlsbad Transit Mix Cement Co. $1.60/ton over the purchase of fine sand.

Original feed to plant consists of rock and sand from old stream bed. The maximum size of crusher feed is 6 inches. After subsequent sizing and crushing to specifications, the Denver Rod Mill grinds a minus ⅜" product to fine sand for use in ready mix concrete.

Previously the minus ⅜" + 10 mesh fraction was a waste product sold as fill for house construction. With the Denver Rod Mill this fraction is now converted to a useable sand product. The increase in value of this feed to the Denver Rod Mill, taken out as sand, is now estimated at $1.60/ton, or $159.60 per day. Feed to the Denver Rod Mill is approximately 12T/HR. The plant operates at approximately 50T/HR.

If you have a size or separation problem in meeting your aggregate requirements, consult us without cost or obligation. Perhaps we can help you solve your problem and increase profits.

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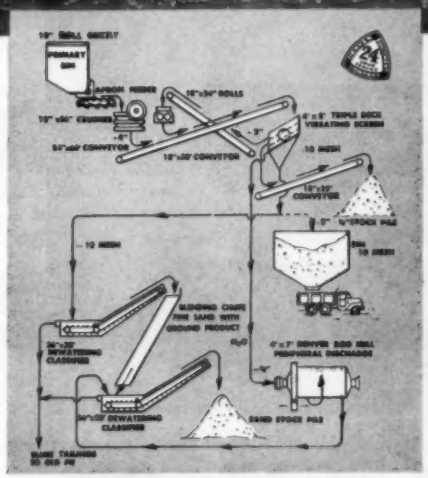
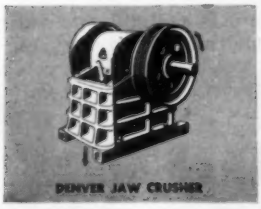


Flow sheet shows installation of 4' x 7' Denver Rod Mill which grinds minus ⅜" fraction to fine sand at a saving of $1.60/T.



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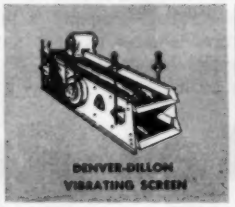

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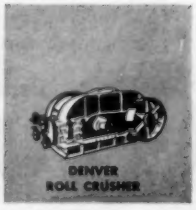
DENVER STEEL HEAD BALL MILL

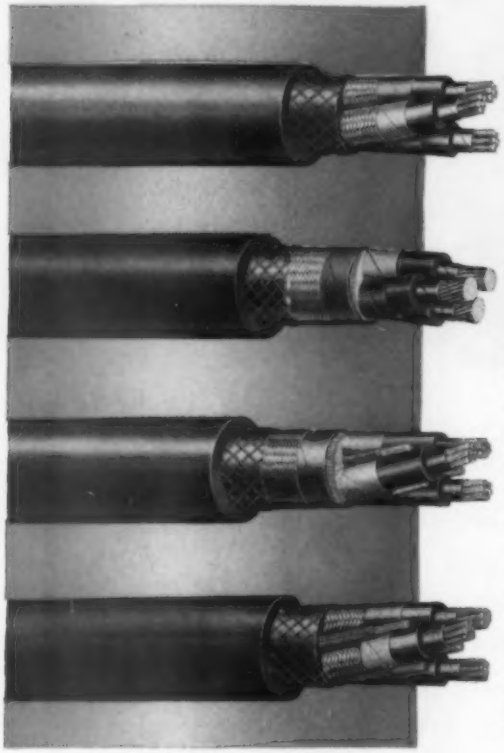
DENVER AUTOMATIC SAMPLER



DENVER ROLL CRUSHER

Avoid costly "Downtime" with U. S. Royal Shielded Portable Power Cables

Shielded Portable Power Cables, Type SH, are preferred (or generally used) for the distribution of power to portable equipment at voltages above 2000. Shielded cables provide greater protection to the insulation and are safer to handle than other types of portable cables. These cables are of the four types listed below. Where maximum safety is desired, type SH-D cables are recommended.



U. S. Royal SH-A Cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S Uskorona-1 oil base compound, and covered with colored tapes and a braided coated copper shield. The conductors are then cabled and covered with a reinforced jacket of 60% black neoprene. The shielded braid over each insulated conductor eliminates corona cutting by static discharge through equalization of surface stresses.

SH-B cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound plus colored tapes. Conductors are then cabled with jute fillers, covered with a rubber-filled tape, a braided coated copper shield and reinforced 60% black neoprene jacket. The shielding braid protects the men handling the cable in the event of fault currents.

SH-C cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound and covered with a colored tape. The conductors are cabled with jute fillers and with the specified fabric-covered ground wires in the conductor interstices; then covered with a rubber-filled tape, braided coated copper shield and a reinforced 60% black neoprene jacket. Ground wires permit grounding of equipment and provide an adequate low-resistance path for short circuits, thus insuring circuit breaker operation. The grounded equipment provides protection to workmen under fault conditions.

SH-D cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound and covered with a colored tape and a braided coated copper shield. The conductors, together with fabric-covered grounding conductors, are cabled and covered with a reinforced black 60% neoprene jacket. The conductor shielding, when properly grounded, equalizes surface stresses and draws off all capacity charging currents, insuring safety in handling. An adequate low-resistance ground for the equipment is provided by the grounding conductors.

All shields and grounding conductors, when used, should be properly and thoroughly grounded.

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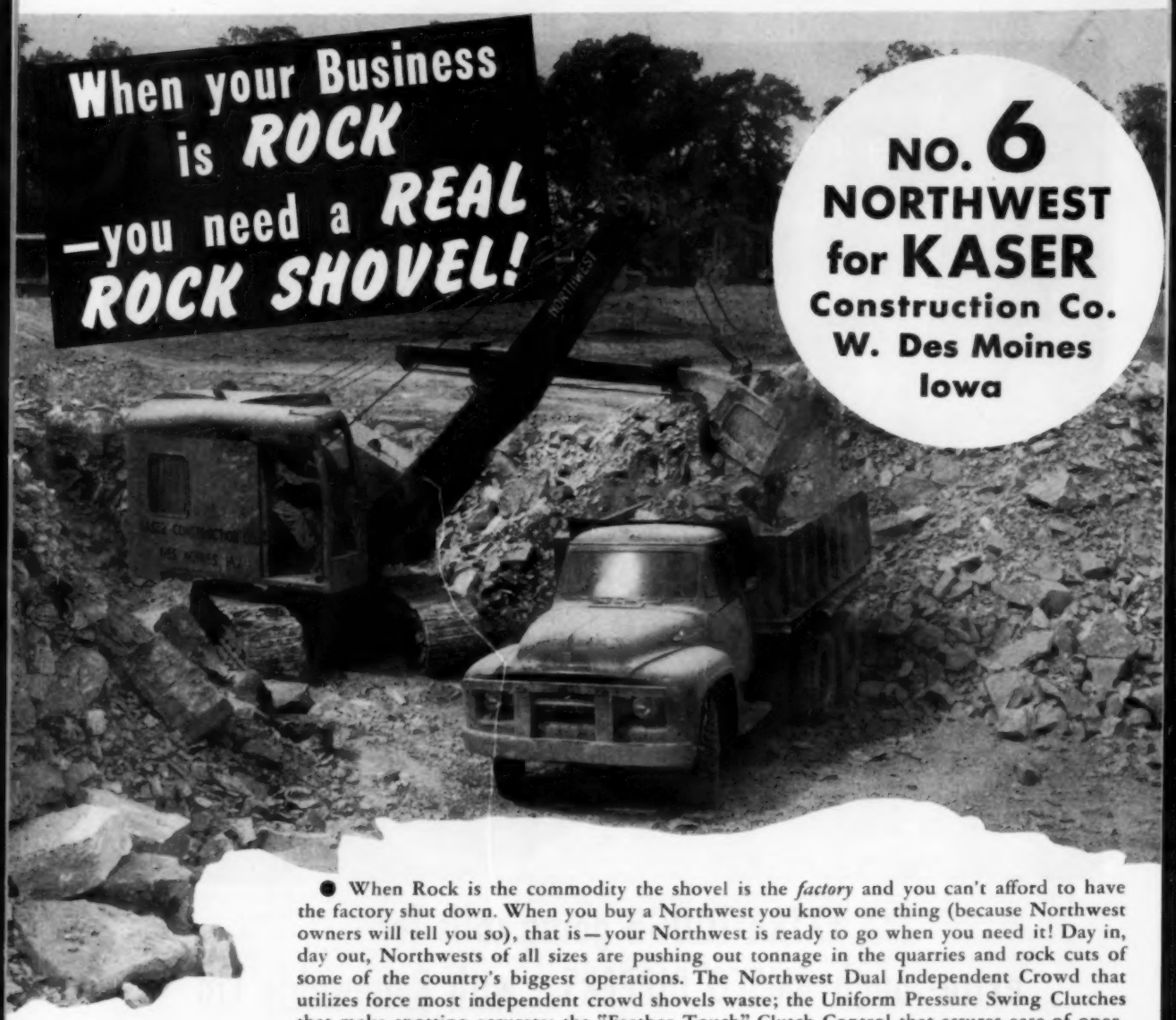

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You save two ways: first, through the extra-long service life of Amsco Manganese Steel Dippers; second, through quick and easy replacement of the Renewable Lip.

See your shovel manufacturer for full information on Amsco Dippers, or write us direct.

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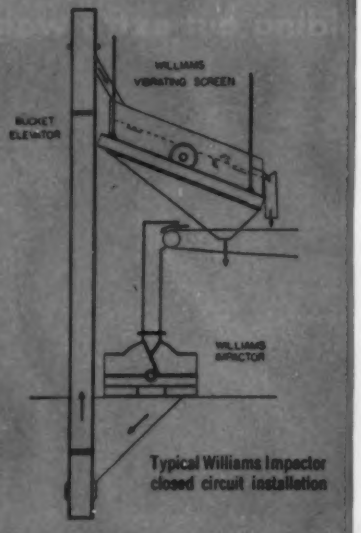
with better product control

Open view showing hammers and impact blocks. Extremely rugged, heavy construction of steel plate with manganese steel liners, hammers and impact blocks. Extra large shafts are mounted in oversize bearings sealed in self-aligning housings.



Typical Williams Impactor closed circuit installation

WILLIAMS *Reversible* IMPACTOR

By properly controlling the forces of speed and mass in size reduction operations, Williams Impactors offer the lowest possible cost-per-ton in producing top quality materials from 2" down to 35 mesh with a minimum of fines . . . or much smaller where more friable products are handled. In closed circuit systems with external vibrating screens, a single Impactor promises 100% product sizing with surprising economy, even with the most difficult specifications.

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You have much to gain in lower costs and better product quality control with an Impactor. *Write for literature.*

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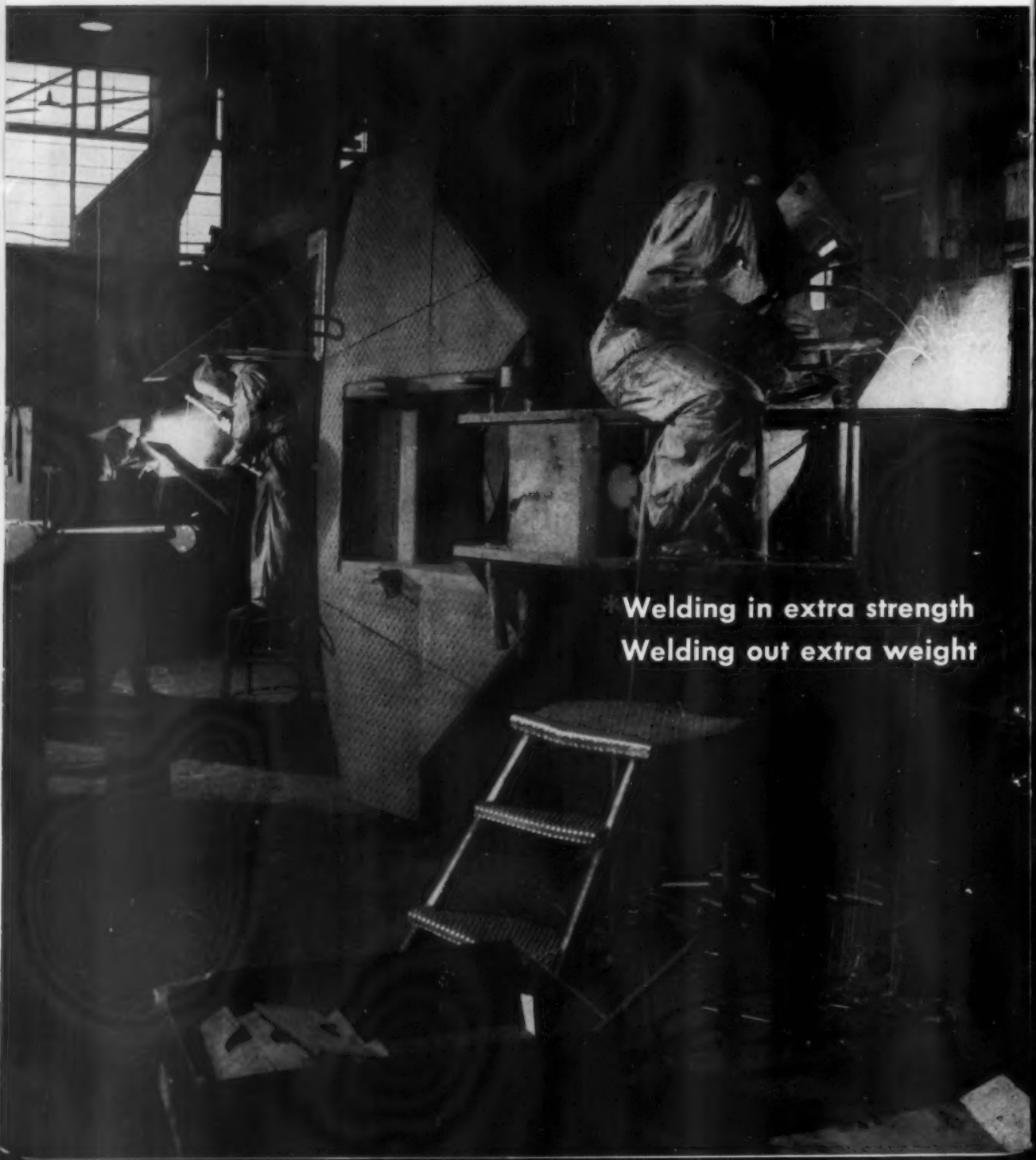


P&H power shovels?

*ALL-WELDED CONSTRUCTION

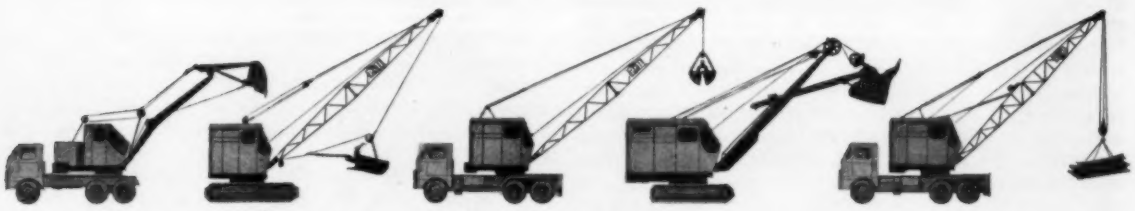
P&H engineers were first to discover that the way to put more guts in excavating equipment was to throw out old-fashioned methods and replace them with modern materials and processes.

That meant welding in extra strength. Getting rid of useless weight.

Castings that added useless weight were replaced with weldments of new, high tensile steels and rolled sections. Gussets, stiffeners and reinforcing plates were added for extra strength. Welding these into one rigid unit is the way P&H puts guts in every ounce of steel.

Years of actual service have proved the value of P&H modern engineering. Shovel users everywhere have demonstrated their acceptance by making P&H the largest manufacturer of power shovels and cranes in the business.

Your P&H dealer will be glad to point out, feature by feature, how P&H puts more guts in power cranes and shovels with all-welded construction. Also, in other ways. Harnischfeger Corporation, Milwaukee 46, Wisconsin.



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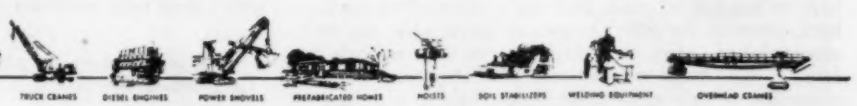


The Editor's Page

A Convention Reports Issue

THIS April, 1956, issue of PIT AND QUARRY is a special convention reports issue due entirely to the fact that a number of the most important conventions of the year were held within less than two weeks. Ordinarily at least two of these conventions would have been held in January and the others in February, over a period of five or six weeks. Instead, three associations, the National Sand and Gravel Association, the National Agricultural Limestone Institute, and the National Crushed Limestone Institute all held their annual meetings the week of February 12-18. The National Crushed Stone Association and the American Institute of Mining, Metallurgical and Petroleum Engineers met the week of February 19-25. This issue of the CONCRETE MANUFACTURER is also devoted largely to convention reports, and for the same reason. Included are reports of the conventions of the National Ready Mixed Concrete Association, the American Concrete Institute, and the National Concrete Products Association (of Canada), all held within the same two weeks.

The conventions this year were by all standards of comparison the best in the histories of these associations. In attendance most of them set new records. The N.S.G.A.-N.R.M.C.A. joint attendance was 6,700, an increase of 1,900 over the previous record in 1954. The N.C.S.A. registration totaled 1,751, an increase of 229 over the 1954 record. In the variety and quality of their programs these meetings were at least up to previous standards. The machinery exhibitions set new records with more and bigger exhibits than ever before.

THESE convention reports make this probably the most important issue of the year to producers of sand and gravel, crushed stone, agricultural limestone, industrial minerals, etc., as they provide in condensed form the latest and best information on the wide variety of problems affecting these industries that can be obtained anywhere. These associations have as members the most progressive and successful companies in their industries; and these companies are headed by the top men in these industries. The executive and engineering staffs of these associations are also leaders in their respective fields, and they retain as consultants top men in the tax, legal, research, personnel, public relations, and other fields. All of this talent is working the year around to solve the problems of these industries, to advance their technology, to make possible better products at lower cost, to develop new markets, to prevent unfair legislation, etc. In many other ways also these men are doing things for all producers, members and non-members.

WE have in these pages reported many of the things associations in this field have done for their industries through the years. Some of these groups date back as much as 40 years, and one need only look through back issues of PIT AND QUARRY to learn what has been accomplished. Most of these industries were in their infancy when these associations were formed and were struggling to gain a foothold in competition with firmly-intrenched materials. Our first real appreciation of the importance of associations came back in the Code days during the depression of the early 1930's, when the staffs and members of many of these associations worked tirelessly with the government in an effort to get our industrial machinery rolling again. These codes fell by the wayside as business picked up, but they created an understanding of the importance of co-operative effort in industry which continues to gain momentum.

We could go on at great length enumerating the accomplishments of these associations if space permitted. Percentage depletion, for example, would probably never have been obtained for these industries had it not been for the united efforts of these groups. The drastic cuts in accident rates would probably not have been possible without the various industry safety programs and competitions. The recent shortages of cement would probably have been much worse had not user industry associations done everything possible to get for their members a larger share of the cement available. Associations have helped their industries to defeat unfair restrictions, discriminatory specifications, rackets, etc., and they are constantly on guard against new threats. The silicosis racket at one time threatened to bankrupt many producers, but prompt and effective action by the associations conquered this issue. Two rackets now threatening certain industries are noise damage suits, and subrogation in connection with blasting damage claims. The associations are hard at work on these problems, and there is every indication of ultimate success.

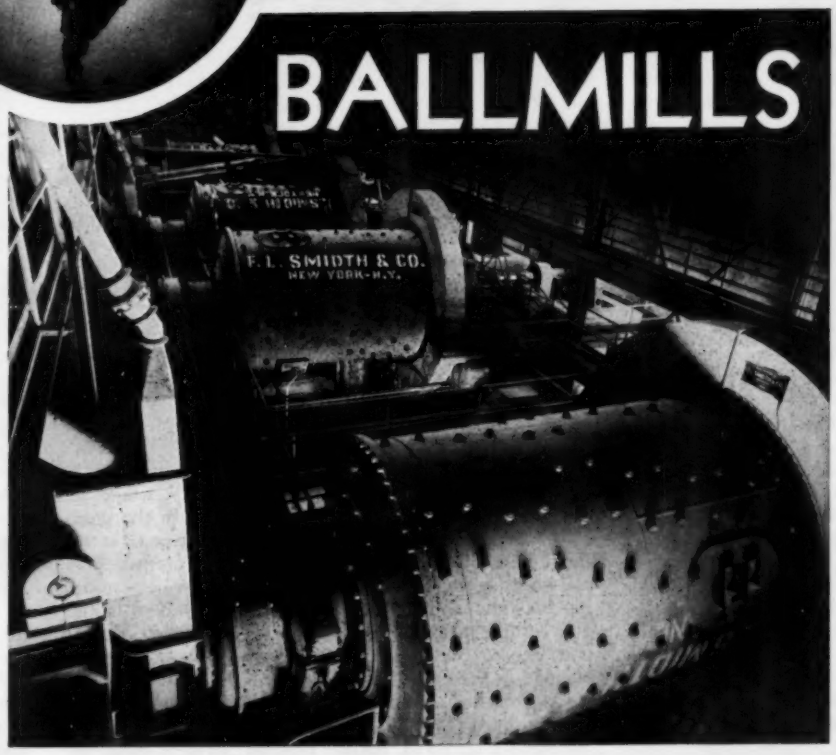
THE members of these associations are kept informed of all important developments throughout the year, giving them an important advantage over other producers who learn about these things much later, if at all. However, these associations all have annual, or in some cases semi-annual conventions at which the most important information developed during the year is presented. These conventions, with few exceptions, are open without charge to all producers who will take the trouble to attend and register.

Members of these associations, whether or not they attend a convention, are usually sent a complete resume, including copies of papers presented, as a part of their membership. Non-members who do not attend can get this information in only one way—by reading it in their trade magazines. It is, we feel, an important function of such magazines, and their duty, to present this information for these readers as completely and accurately as possible. True, it is only a fraction of what they would have learned by attending, as they miss the many personal contacts with other producers, machinery manufacturers, and others, which can be so valuable. It is also impossible for us to provide a substitute for the machinery exhibits which form such an important part of many conventions.

Walter E. Trauffer

SMIDTH

BALLMILLS



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Washington News Letter

IN Washington, at the moment, two things appear to be certain: (1) that President Eisenhower will again head the Republican ticket in the forthcoming election, and (2) that 1956 will again be a prosperous year.

The first of these certainties was established by the President himself. Events in the first few months of the year appear to be establishing the second.

As 1955 was drawing to a close, there was much concern about the outlook for the new year. Now that the early returns are in, it looks as though 1956 is carrying on where 1955 left off.

In January and February industrial production, retail sales, and construction were at about the same level as in December. But this is better than it looks because, compared to the first two months of 1955, this is more than a 5 percent increase.

Of course, not every line is up 5 percent or more. It is well known, for example, that automobile sales and production are down from the very high level of the previous year. It is possible now to look back and see what really happened in the automobile industry. Automobile output in March is 30 percent below what it was in the November, 1955, peak. This is a consequence of the over-optimism which resulted, by the end of January, in dealers' holding a record-breaking stock of over 800,000 new cars.

While only a small portion of this backlog has been worked off, by the end of February only as many automobiles were being made as were being sold. It is confidently expected that the usual spring upturn in new car sales will use up most or all of the inventory and that the industry will be back in balance. The remarkable thing in the automobile story is that the 30 percent reduction in output of this key industry has affected the total economy hardly at all. Evidences of hardship have been found only in relatively isolated spots in auto-producing areas.

The other trouble spot appeared to be brewing in home construction. Housing starts reached a peak toward the end of 1954 and fell all through 1955. In the final quarter of 1955 the drop was very rapid; F.H.A. applications were running 40 percent below the same period in 1954 and V.A. appraisals were one-third lower. The government authorities became so concerned about the situation that they reversed many of their previous contractionary moves. In December, 1955, the Home Loan Bank Board eased somewhat its earlier restrictions on borrowing, and in January the V.A. and the F.H.A. once again permitted mortgages with 30-year maturities.

As a result, mortgage money is more readily available, the discounts at which outstanding insured and guaranteed mortgages have been selling has narrowed, and requests for V.A. appraisals have risen. Finally, the seasonally adjusted rate of new homes started has not fallen below the December level. All the signs point to an increase as the year progresses. In the housing sector, too, the economy appears to have weathered the storm without any serious consequences.

In other industries there is no reason to expect any decline. Despite auto cutbacks, shortages in non-ferrous metals and steel persist. Even the relatively laggard textile and soft-goods industries report continuing high demand for their products. The equipment and machinery industries are so oversold that increased capacity is their only salvation.

One curious explanation of the lack of hardship resulting from the auto cutbacks is that, despite its 1956 experience, the auto industry has not modified its substantial spending program for expansion and modernization of facilities. By its increased capital outlays it is providing other employment for about the same number of persons it has to lay off from its production lines. Of course, there is no assurance that the laid-off employees are, in fact, the employees hired by the capital goods industries.

Finally, there is the faithful consumer. He has not cut back his spending, and there is no evidence that he will do this in the near future. Department store sales in January and February are running 5 percent above a year ago. Apparently consumers are spending less on automobiles but more on many other things.

The very fact that there is little immediate concern about the economic future accounts for the turn in the political debate to non-economic matters. For example, there is little that the Democrats can offer in the way of greater prosperity. Even the argument that "they could do it better" has a false ring. Of course, in the farm areas, where prosperity continues but does not abound quite the way it did a few years ago, they are not failing to use the opportunity to turn the discontent into Democratic votes. However, for the most part, this tactic is not what is making the political kettle boil.

Rather, such matters as the state of the President's health, the choice of the Republican vice-presidential candidate, and the nature of the job of the Presidency have become burning issues. In the face of real crises on the economic or other fronts, it is unlikely that these issues would assume such pre-eminence. The experience with President Roosevelt's final campaign, when his obvious failing health failed to be noticed by 120,000,000 people whose minds were on the more pressing problem of the war, would seem to bear this out.

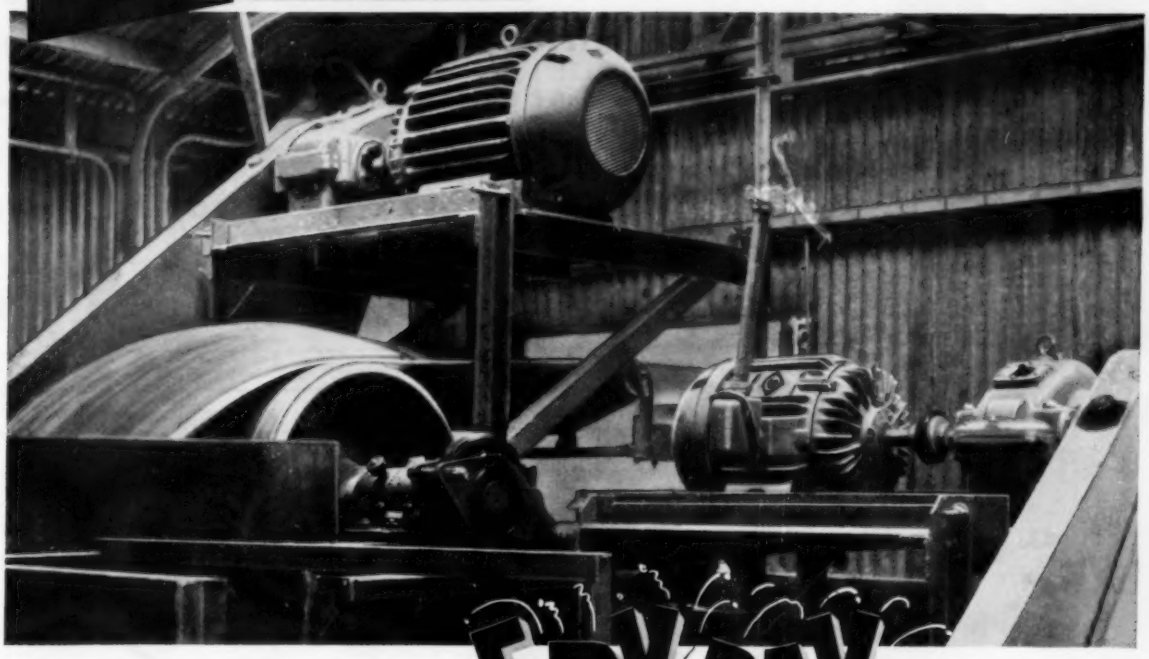
In the same vein, foreign policy is assuming a completely unprecedented prominence in the political debate. To be sure, this represents a genuine concern in the cause of peace in the world. This is an area in which the Democrats will argue that they can do it better. Their charge that Secretary Dulles shows public ineptitude has created a ready-made target to shoot at.

At the moment the trouble in the Middle East furnishes the subject matter of the debate; but even if that problem is solved or ameliorated, Russia can always be relied on to stir up trouble somewhere else. Here the Democrats hope to trade on the same basis which served the Republicans so well four years ago—namely, the American people's fear and abhorrence of war. Just as the Korean War was tagged on the Democrats, any shooting in the Middle East will become a Republican responsibility.

Finally, there is that explosive non-economic domestic issue, racial integration in the Southern states. With respect to this matter, neither side is claiming that they could do it better. Actually, both sides are talking gradualism and hoping that nothing serious will happen until after November. Although the Republicans

(*Continued on page* 44)

There's **MORE** Cooling Surface in these deep-ribbed **MOTORS**



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● Frying of insulation is impossible under normal conditions with the extra-large cooling surface of Allis-Chalmers rib-type TEFC motors. The result—you expect and get longer motor life.

The engineered partner of A-C motors is Allis-Chalmers control.

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Cement Manufacturers and Chemical Lime Manufacturers

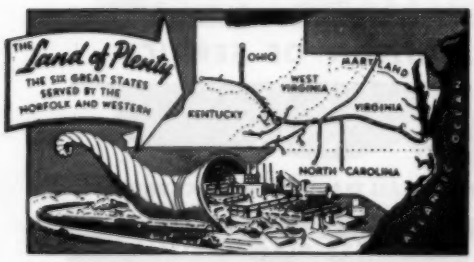
There is a deposit of over 100 million tons of limestone strategically located on the Norfolk and Western —with a known thickness of more than 100 feet, and an average $CaCO_3$ (Calcium Carbonate) analysis of over 97.5 per cent.

And here are typical analyses*

	DHL-1-1	DHL-1-2	DHL-1-3
SILICA (SiO_2)	.36%	.30%	.34%
IRON OXIDE (Fe_2O_3)	.072	.043	.049
ALUMINA (Al_2O_3)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.65	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

* Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

If you're planning a plant—it will pay you to see us. Call or write; we will respect your confidence. We would like to tell you about this valuable limestone deposit.



INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer PQ-718 (Phone 4-1451, Ext. 474)
Norfolk and Western Railway
ROANOKE, VIRGINIA

Norfolk and Western RAILWAY

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CUT DOWNTIME LOSSES AND REDUCE TIRE COSTS ON LARGE OR SMALL HIGHWAY CONSTRUCTION JOBS

TODAY'S fast highway construction timetables call for rugged, efficient earth moving equipment that is capable of top performance in all types of soil conditions.

Earth moving units, like the one illustrated above, will maintain better schedules and cost less to operate if they roll on Firestone Nylon Tires.

Firestone Nylon Tires are built for the toughest service. The treads give maximum traction and they are extra tough to resist cutting. Double-thick sidewalls give added protection against cuts and snags.

Firestone's Safety-Tensioned Gum-Dipped nylon cord body gives greatest protection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

Let your Firestone Dealer or Store show you how Firestone Nylon Tires will cut downtime and increase the profits on any job.

A TIRE FOR EVERY ROAD, LOAD AND CONDITION OF SERVICE

GROUND GRIP GG WIDE BASE ROCK GRIP RG WIDE BASE ALL NON-SKID ALL TRACTION RIB EXCAVATOR

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NEW...

Bonus Powered too!

NEW

124 Net Engine Horsepower. In International Drott Machines, Engine develops 134 Net Horsepower.

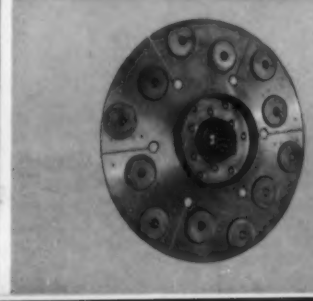
182 Series

TD 18

TD-18 diesel (series 182) delivers 103 drawbar horsepower, with weight of 29,050 pounds (without equipment). All-weather electric starting, standard equipment. "New look" visibility, operating ease never before available. New heavy-duty, swinging-door type radiator guard is "standard"—for carrying heavy front-mounted equipment. Gives big tractor performance in pioneering under roughest conditions. Powers 3-yard International Drott Skid-Shovel, anywhere.

No costly delay from a "killed", or cold engine—you start fast! Famous International *gasoline-conversion* diesel starting—*actual* "in-seat" starting—is *standard equipment* on this new crawler line. With "push-button" ease, you get seconds-fast starting, whether the engine is cold, or stopped! And you're on the job seconds-fast, when minutes are dollars.

Cerametallic Engine Clutch Facings Save power, defy heat, prolong life! Uncomplicated, *familiar-to-all* engine clutch design of these new crawlers have *power-holding, heat-defying, long-lasting* Cerametallic facings. These facings reduce lever-pull up to 50%, provide amazing heat immunity, add service freedom, cut upkeep!



Now . . . 500-hour lube intervals with new metal-to-metal, track roller seals! You save the time and expense of frequent inspections or lubrications, with the new *full-floating*, cartridge-type, track roller seals provided on the TD-24, TD-18, and TD-14. These precision-lapped, metal-to-metal seals are so effective they give you safe 500-hour intervals between roller lubrications!

Steps up a size... in job range and capacity!

50 Net Engine Horsepower. In International Drott Machines, Engine develops 55 Net Horsepower.

61 Series

TD 6

TD-6 diesel (series 61), 41.5 drawbar hp, up 23%! Steps up a whole size in work capacity and earning ability. Operating weight (5-roller model), without equipment, 8,890 pounds. Powers 1-yard International Drott Skid-Shovel or Four-In-One; serves as clean-up dozer unit on any-sized contract; versatility and low operating cost to do many sizes of jobs for every size of contractor.

Con
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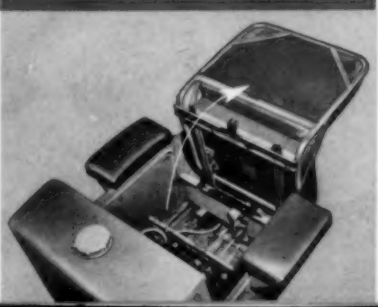
Full-view, one-glance panel saves time—cuts effort! One quick glance at this new full-view panel, with centralized instrument grouping, gives the operator the instant check-up, to assure that lubrication, generator, and cooling system are "perking" for full production!

New Fold-over Seat Aids Fast, Centralized Servicing! New fold-over seat of the TD-6 and TD-9 models allows operator to give you the time and convenience advantages of centralized steering clutch assembly servicing. Lubricant fittings are conveniently grouped and fully accessible!



Thorough air filtration assured by new under-hood cleaner! Instead of being "in your lap," or a knee-bumping obstruction, air cleaners of the new International crawlers are side-mounted—for easy accessibility, yet out of the way. They have big capacity and high efficiency, too, for positive air filtration!

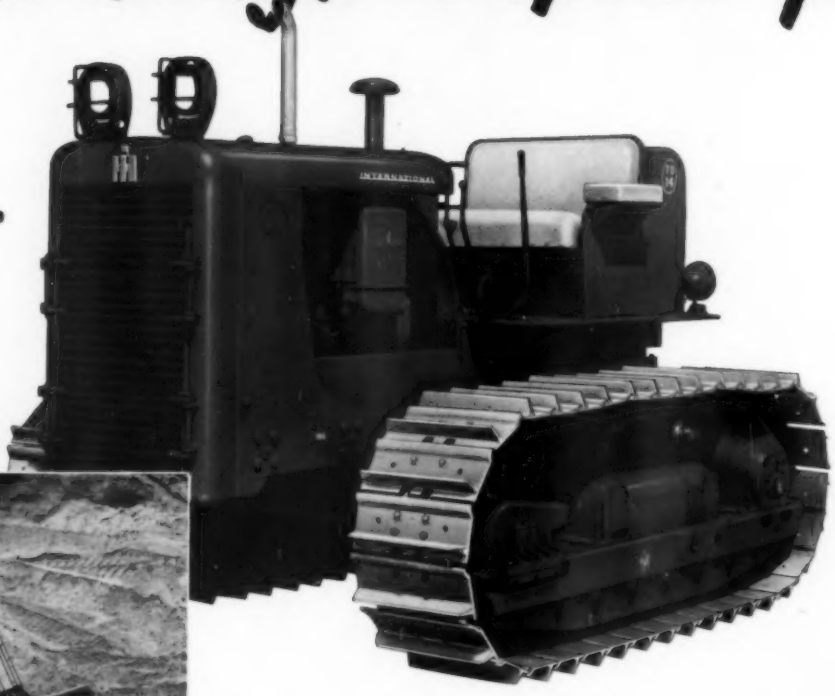
International® Crawlers gi

plus new design to speed yo

95 Net Engine Horsepower.

142 Series

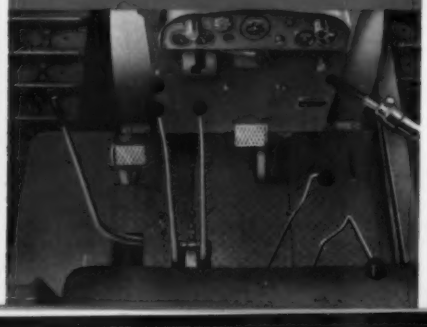
TD 14



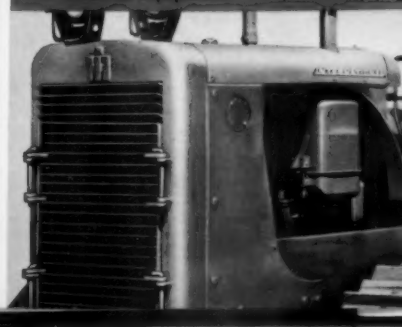
TD-14 (series 142), 78.5 drawbar hp; weighs 21,095 pounds (without equipment). Features "new look" engineering, job-speeding visibility, new equipment-carrying and operating strength. All-weather electric starting, standard equipment. It's a fast, responsive, big-capacity dozing tractor. Powers 2¼ cu. yd. International Drott Skid-Shovel or Four-In-One; 15-ton capacity Superior Pipe-Boom; other similar-sized equipment.

Control Tower Visibility adds operating efficiency! See how new International crawlers are streamlined for complete job-control visibility. Seat is amply high to provide full view of equipment, terrain, and variations requiring operator action, to maintain efficiency.

Clean, safe deck cleared for action! Look down on that safe, clean, flush deck—a platform for full production. The wide, man-size seat is fully-adjustable; foam rubber padded. Instruments centralized for one-glance check-up! Even a cigarette lighter is provided, to prevent needless stops!



Pressurized Closed Cooling System for Positive Performance Protection! New pressurized cooling systems provide fast warm-up under thermostatic control—and positive *ideal temperature control* with forced circulation through full-length jackets. That aids clean combustion, guards oil film strength, protects performance. Radiator core assembly is easily-removable, without disturbing radiator guard or mounted equipment.



...give you Bonus horsepower—...your jobs, control your costs!

66 Net Engine Horsepower. In International Drott Machines, Engine develops 71 Net Horsepower.

91 Series

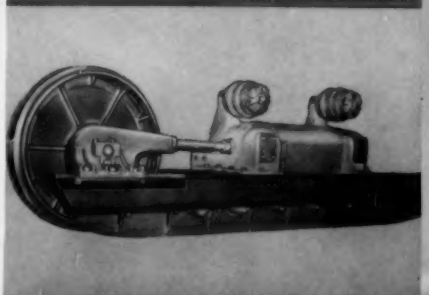
TD 9

TD-9 diesel, (series 91), delivers 54.5 drawbar hp—up 32%. Operating weight (5-roller model), without equipment, 12,000 pounds. Now up in a new heavy-duty job range. New power is backed by new power-train and track frame strength, new operating and servicing ease. Powers International Drott 1½ cu. yd. Skid-Shovel and other equipment requiring similar power.

480-hr. full-flow lube oil filters guard bearings, cut upkeep! Every drop of oil on its way to lubricate moving engine parts must pass through these new abrasive-trapping micron-type filters—with the capacity, strength, and efficiency to give 480 hours of wear-fighting, upkeep-cutting duty!

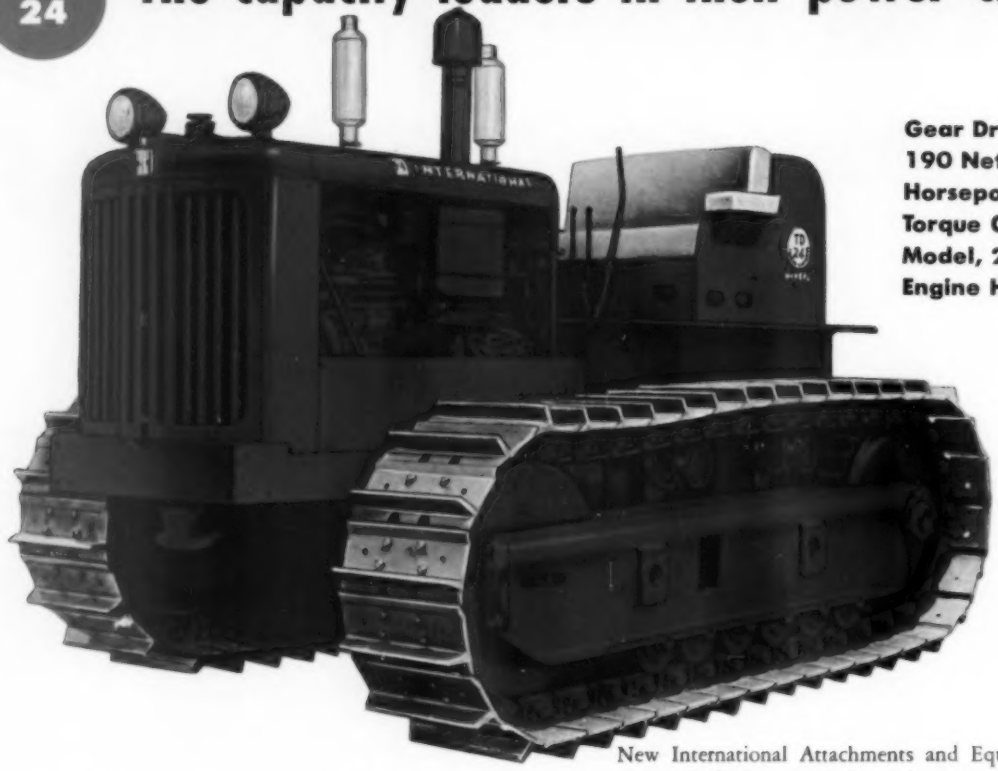
Hydraulic Power Steering Inspires Operator Cooperation! New hydraulic power steering of the TD-14 and TD-18 cuts operator fatigue—and along with the other big effort-saving advantages, makes it easier than ever to deliver full-capacity production! TD-6 and TD-9 have spring boosters to lighten the operator's job.

"Bridge-strong" track frames for "slam-bang" conditions! You are looking at the strongest track frame in the industry for crawlers of TD-18 and TD-14 size! Heavy steel box-section beams, weld-joined to heavy stress-relieved steel plates—and rigidly gusset-braced—they're your foundations for record-making "rough-and-tumble" performance!



TD 24

The capacity leaders in their power class



Gear Drive Model, 190 Net Engine Horsepower Torque Converter Model, 200 Net Engine Horsepower

Massive—with 43,080 pounds of rock-dozing, scraper-pushing brawn (7-roller torque converter model)*—the TD-24 can give them all a lesson in operating ease, big capacity, and positive load control! Has instant high-low range and exclusive Planet Power steering to give you its tremendous *pushing*, *pulling*, and *lifting* power on any terrain—with responsiveness not available elsewhere! *Live power on both tracks, on every turn!* Backed by equipment engineered to match its strength and power!

*Gear Drive 7-roller model weighs 42,780.

New International Attachments and Equipment team with new bonus-powered crawlers to give you high-producing performance packages: 42 new Bulldozers, to fit your needs exactly . . . 4 new Drott Loaders, 1 to 3-cubic yard capacity . . . 4 new Superior® Pipe-Booms, 8 to 55-ton capacity; 3 job-proved PCU'S! . . . **Measure . . . compare . . . prove to yourself . . . new bonus-powered International crawler tractors beat anything else on tracks! Try this turnpike-paced new power for capacity, operator preference, profit potential. Ask your International Industrial Power Distributor for a bonus-powered demonstration *to your specifications!***

INTERNATIONAL HARVESTER

International Industrial Power

INTERNATIONAL HARVESTER COMPANY, 180 N. Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Tractor and Rubber-tired Loaders . . . Diesel and Carbureted Engines . . . Motor Trucks.

News of the Industry

Standard Portland Cement To Raise Annual Output To 2,700,000 Bbl. This Year

Anticipating a continuing increase in portland cement requirements in Cleveland, northeastern Ohio, and northwestern Pennsylvania, officials of the Diamond Alkali Company have announced the approval of plans for increasing production capacity by 42 percent at the Standard Portland Cement plant in Painesville, Ohio. This announcement was issued by L. T. Welshans, general manager of Diamond's Cement-Coke Division.

The 800,000-bbl. per year increase in capacity for Standard Portland Cement will result from the conversion of another lime kiln to cement clinker manufacture. Other equipment to complement the cement kiln includes an electrostatic dust-collection system, new stone and clay mills, a large finish-cement mill, and additional storage for slurry and cement clinker.

The new installation, to be integrated with present facilities, will increase Diamond's cement production from 1,900,000 to 2,700,000 bbl. per year, in time for the 1957 construction season.

Present plans include the installation of facilities for producing high-early-strength cement, a new product for the Standard Portland Cement plant. It is used in winter construction work and in prestressed and other concrete products. Equipment will also be added to improve loading facilities and production of Standard's mortar cement.

The 300,000-bbl. per year expansion announced in June, 1955, will be in operation before the 1956 construction season.

3 Missouri Cement Firms To Increase Output 25 Percent

Marquette Cement Manufacturing Company, Alpha Portland Cement Company, and Missouri Portland Cement Company will increase their 1956 output by 25 percent through plant expansions. Improvements in five plants of these three companies will bring their 1956 total up to 15,671,000 barrels.

At Cape Girardeau, Mo., the Marquette Cement Manufacturing Company has a $7,000,000 expansion program under way which will allow production of an additional 1,200,000 barrels. Work has already begun on a new plant. Allocation of $500,000 for improvement of the existing facility reportedly was made for more efficient dust filtration.

Alpha Portland Cement Company's St. Louis plant reports an increase in capacity of 200,000 barrels, which is now effective. A new plant, which will be completed in St. Louis in 1957, will increase Alpha's capacity by 700,000 barrels per year.

Missouri Portland Cement Company has increased the capacity of its Sugar Creek plant by 350,000 bbl., and its Prospect Hill branch by 700,000 bbl.

The Penn-Dixie Cement Corporation has reported net earnings for 1955, subject to adjustment and final audit, of $8,876,121. This is equal to $2.72 a share on the 2,528,971 shares outstanding on December 31, 1955, excluding the Dec. 15 dividend.

Coming Events

April 19-21, 1956—Boca Raton, Fla. Spring meeting, National Lime Association. Boca Raton Hotel.

June 17-22, 1956—Atlantic City. 59th annual meeting and 12th apparatus exhibit, American Society for Testing Materials. Chalfonte-Haddon Hall.

July 12-13, 1956—Lake Placid. Mid-year directors' meeting, National Crushed Stone Association. Lake Placid Club.

October 10-12, 1956—Springfield Mo. Operating meeting, National Lime Association. Kentwood Arms.

Kaiser Gypsum Co., Inc. Opens First Antioch Unit—Larger Addition Being Built

Kaiser Gypsum Company, Inc., has begun production at the first unit of its multimillion-dollar Antioch, Calif., gypsum products plant, 4½ months after groundbreaking.

This new unit, which has an annual capacity of 94,000,000 sq. ft. of gypsum board products, is the forerunner of a second larger addition which will increase production to a total of 274,000,000 sq. ft. of gypsum board products and 20,000 tons of plaster by November, 1956.

Located on a 38-acre site on the San Joaquin River, east of the Antioch city limits, the plant initially will employ approximately 100 persons, with an eventual employment of 220.

The first shipload of raw gypsum rock from the company's quarries on San Marcos Island, Lower California, arrived recently aboard Kaiser Gypsum's 10,000-ton ore vessel, *S.S. Harry Lundeberg*.

The main facilities now in operation include a nine-story, 16-sided domed building for storing 35,000 tons of gypsum rock, a 950-ft. dock, and a gypsum board products plant with 42,500 sq. ft. of floorspace. Additional construction now under way will add over 200,000 sq. ft. of floorspace when full production is realized next fall. The Antioch plant was designed and is being constructed by the Kaiser Engineers Division of the Henry J. Kaiser Company.

Kaiser Gypsum operates two other gypsum plants on the Pacific Coast—at Long Beach, Calif., now undergoing a 60 percent expansion, and at Seattle, Wash.

An important decision reached by members at the recent convention of the National Crushed Limestone Institute concerned the headquarters of the newly organized group. It was decided to set up an entirely separate office for N.C.L.I. at 615 F Street, N.W., in Washington, D. C. (Temporary headquarters had been at the offices of the National Agricultural Limestone Institute, Inc., located at 619 F Street.)

37 Eastern States Report Highs in Building Awards During Jan.-Feb. Period

At least eight new high records were set by the latest dollar totals of Dodge Reports of contract awards for future construction in the 37 eastern states, F. W. Dodge Corporation has announced.

The February total of $1,859,737,000 was a record, up 18 percent over February last year. The first two-month total of $3,717,965,000 was a record, up 21 percent over the like period of last year. These gains are noteworthy because the first two months of last year showed even more sizable percentage gains over the corresponding period of 1954, a Dodge spokesman said.

All three of Dodge's major classifications set new high records both for February and for any first two months.

For February: non-residential, $630,054,000, up 18 percent over February, 1955; residential, $799,271,000, up 7 percent; heavy engineering, $430,412,000, up 42 percent.

For two months: non-residential, $1,291,329,000, up 17 percent; residential, $1,493,663,000, up 6 percent; heavy engineering, $932,973,000, up 69 percent.

U. S. Burnite Corp. to Build Facility at West Dallas, Tex.

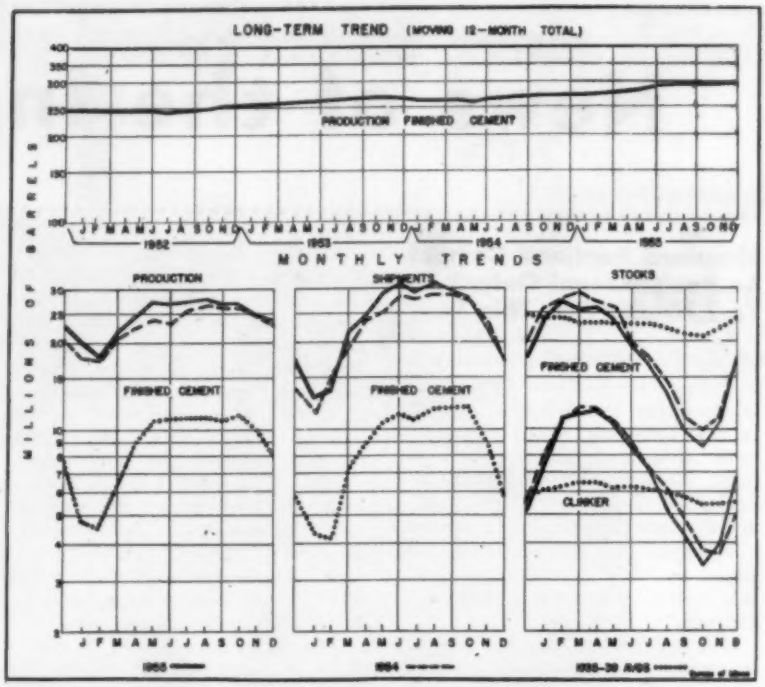
Contracts have been let for the construction and equipping of the 40,000-unit U. S. Burnite Corporation plant in West Dallas, Tex., which will manufacture lightweight aggregate building units containing the revolutionary Burnite binder invented by William H. Burnett of Hutchinson, Kansas. The Ceramic Building and Material Company, Dallas, Tex., headed by R. W. Scott of Hoisington, Kans., has been awarded a turn-key contract of approximately $437,400.

Mr. Burnett, executive vice-president of the U. S. Burnite Corporation, says the main plant building will be 342 by 70 ft. in area. Machinery and silos will be housed in a separate projection building.

Since the contract provides for a turn-key job, the Ceramic Building and Material Company will also provide the machinery and equipment including a dryer and kiln, approximately 100 kiln cars, and 100 dryer cars, a concrete block vibrating machine or brick press for molding the tile, a 50-cu. ft. mixer, belt conveyors, and elevators. In addition, Ceramic Building will provide two units of crushing equipment.

Burnite binder is said to greatly reduce the firing time of the lightweight aggregate producing process and to enable the manufacturer to produce a block or brick of perfect dimensional accuracy in which expansion and contraction are eliminated. The weight of a building unit is reportedly reduced by approximately 25 percent.

A color glaze can be applied to Burnite products in the initial firing process, making them attractive in appearance, sanitary, and impervious to acids.



SUMMARY—Production of finished portland cement in December, 1955, as reported to the U. S. Bureau of Mines, totaled 23,075,000 barrels—an increase of 4 percent over December, 1954. Mill shipments in December, 1955, totaled 16,979,000 barrels, an increase of 4 percent compared with December, 1954—while stocks of 17,536,000 barrels of finished portland cement on hand December 31, 1955, were 5 percent more than on the same date last year. Clinker production during the month totaled 25,771,000 barrels, an increase of 7 percent over the December, 1954, figure.

PRODUCTION—One hundred and fifty-six (156) plants in 37 states and Puerto Rico reported a production of 23,075,000 barrels of finished portland cement during December, 1955, as compared to 22,290,000 barrels during the same month last year.

Clinker production during December, 1955, was 25,771,000 barrels, compared with 24,029,000 barrels during December, 1954.

Clinker figures for 1955 are not strictly comparable to those of 1954 and earlier years because producers are now asked to report clinker in terms of the number of 376-lb. barrels of finished portland cement that could be produced from the quantity of clinker in question, whereas previously the unit of measure was the 376-lb. barrel of clinker.

Separate data on high-early-strength (Type III) by districts and prepared masonry cements appear in this year's reports. Production of high-early-strength portland cement in December, 1955, totaled 1,490,000 barrels, an increase of 22 percent, compared with the December, 1954, production. The production of prepared masonry cement was 1,179,000 barrels of 376 lb. each.

SHIPMENTS—Mill shipments of finished portland cement were 4 percent higher in December, 1955, than in December, 1954, and totaled 16,979,000 barrels. This figure and the district totals that comprise it are not strictly comparable with mill shipments of previous years because they do not include, as in the past, the number of barrels of finished portland cement used in the manufacture of prepared masonry cement.

Shipments in December, 1955, were higher in 14 districts and lower in 6. The greatest increases were registered in western Pennsylvania-West Virginia, Ohio, and Tennessee districts. The greatest increase was in the northern California district.

Mill shipments of high-early-strength portland cement in December, 1955, totaled 898,000 barrels. Nearly half of these shipments were from mills in the eastern Pennsylvania-Maryland and Michigan districts. No shipments were made from the mills in Puerto Rico.

Mill shipments of prepared masonry cement in December, 1955, totaled 886,000 barrels. Nearly half of these shipments were from mills in four districts—eastern Pennsylvania-Maryland, Indiana-Kentucky-Wisconsin, Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi, and Michigan. Prepared masonry cement data are shown in equivalent barrels of 376 lb. each to maintain uniformity with the portland cement data.

STOCKS—Mill stocks of 17,536,000 barrels of finished portland cement were on hand December 31, 1955—5 percent more than the 16,731,000 barrels on hand December 31, 1954. Stocks of clinker on hand at the end of December, 1955, totaled 6,750,000 barrels, an increase of 28 percent more than on hand December 31, 1954.

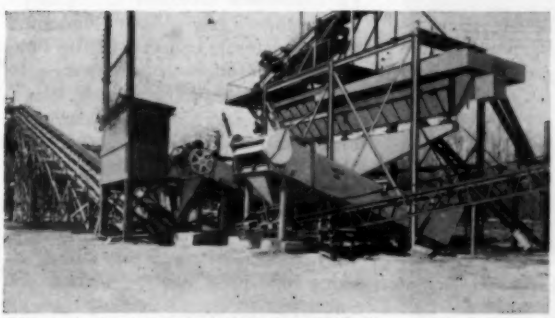
46% of All EAGLE Aggregate Washing-Classifying Equipment Sales are REPEAT Sales!

Yes, 46% of the sales of EAGLE Sand and Gravel, Crushed Stone and Ore Processing Equipment are repeat sales—a great many producers have purchased repeatedly—some as many as 25 or more times. Aggregate producers are necessarily cost-conscious and performance-conscious—if they come back for more of the same equipment, it must be right. The fact that so many have bought again and again—proves that their original investment in Eagle Equipment really paid off.

Nothing takes the place of experience and EAGLE has it. The user of Eagle Equipment profits by this experience.

Take advantage of Eagle's pilot washing-classifying plant in our "back yard" and our testing laboratory—Eagle engineers can solve your problem. Send a 10 lb. pit run sample for a *free* analysis and recommendation as to your needs.

Hallett Construction Co. and subsidiaries bought their first Eagle Equipment in 1929. Their 45th Eagle installation, at Marlboro, S. C., is shown above.



Clear Lake Sand & Gravel Co., Springfield, Ill., an early Eagle customer in 1926, has continuously bought Eagle Equipment as their plant was improved and capacity increased, based on satisfaction.

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EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

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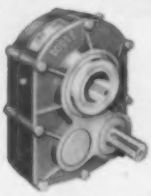

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Dodge Bulletins you should have-

- Flexidyne Dry Fluid Drives and Couplings. Complete story and selection data. Bulletin A-640-A.
- Torque-Arm Speed Reducers. Technical data and selection methods on all 14 sizes, 1 to 60 hp. Bulletin A-637.
- Rolling Bearings. Load ratings, dimensions and other data on Dodge-Timken and SC and SCM Ball Bearings. Bulletin A-638.

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A.E.D Convention Draws Record Equipment Group To 5-Day Chicago Meeting

The largest convention registration ever enjoyed in the 37-year history of the Associated Equipment Distributors turned out for that group's five-day meeting in the Conrad Hilton Hotel in Chicago, January 29 to February 2. More than 3,400 distributors and manufacturers from the United States and Canada were present. They represented 690 distributor organizations and 309 manufacturers of construction equipment.

The proposed federal highway program was a predominant feature of several addresses given during the meeting. Four major business sessions were held during the convention, and attention was focused on the following subjects: construction's responsibilities; highways; the important problems affecting distributor-manufacturer relations; and distributors' problems in the areas of territory allocation, incentive plans, salesmen's compensation, and used equipment disposal.

The A.E.D. officers elected for 1956 during the 37th annual meeting include Stanley F. Laskey (Northwestern Equipment Inc., Fargo, N. D.), president; L. Miner Doolen (Telford Equipment Co., Lansing, Mich.), executive vice-president; H. D. Anderson (Rish Equipment Co., Bluefield, W. Va.), F. J. Fitzpatrick (Parker-Danner Co., Hyde Park, Mass.), and D. C. Campbell (Tractors and Equipment Ltd., Fredericton, N. B., Canada), vice-presidents; and J. R. Borchert (Borchert-Ingersoll Co., St. Paul, Minn.), treasurer.

Running concurrently with the opening three days of the 1957 Road Show which is sponsored by the American Road Builders Association, the 1957 A.E.D. convention will again be held at the Conrad Hilton hotel in Chicago late next January. R. F. Newlin (Newlin Machinery Corporation, Kansas City, Kans.), will serve as chairman of the 38th annual meeting committee.

THE COVER

Entering its second quarter century of operation, the Port Inland, Mich., plant of the Inland Lime and Stone Company has experienced a growth of nearly 300 percent in productive capacity over the last 20 years. Production, which was about 1,500,000 tons in 1935, reached the impressive total of 4,250,000 tons in 1955.

Numerous extensions and additions to the original screening and stockpiling equipment were made through the years since 1930, and recent expansion work that included the installation of belt conveyors, among other equipment, is expected to increase the screening capacity by 50 percent. This will provide the plant with a potential annual capacity of 5,000,000 tons.

Rutgers U. Given Fellowships By Two Eastern Producers

Fellowship grants in the department of geology and bureau of mineral research of Rutgers University were made recently by the Warner Company of Philadelphia and the North Jersey Quarry Company of Summit, N. J.

A $6,500 grant was set up as the Warner Fellowship Fund, which will be used by the university's bureau of mineral research to finance the development of improved lightweight aggregates for use in concrete. Earlier research studies indicated that certain New Jersey shales, trap rock, and clay could be processed to produce suitable lightweight aggregates; the new studies will continue this project.

North Jersey Quarry Company's $500 fellowship will be used for the investigation of New Jersey clays, which will be appraised as to their properties, location, and abundance.

Keystone Lime Works Sold To Southern Cement Company

Keystone Lime Works, Keystone, Ala., a veteran concern in the lime industry, was recently purchased outright by the Southern Cement Company, a division of the American-Marietta Corporation.

K. L. Hammond, secretary-treasurer of Keystone, who is a past-president of the National Lime Association, has been retained by the purchasing firm to direct sales of Keystone lime products.

• HELP WANTED

"Thirty Years Ago in Pit and Quarry" will not appear in April, May, or June, as no copies of the issues of those months in 1926 remain in our files. We have made every effort to replace them, but to no avail. If you have copies of those issues, we would like very much to borrow them in order to have photostats made for our files. Please let us know if you can be of assistance.

N.L.A. Convention Program To Stress Lime Stabilization In Talks, Panel Discussion

According to word from the National Lime Association headquarters in Washington, the program planned for the association's annual convention in Boca Raton, Fla., April 19, 20, and 21, will be most worth while.

Dominant note of the meeting, which will be held at the Boca Raton Hotel, is to be the N.L.A. lime stabilization promotional program. Conard M. Kelley, N.L.A. highway engineer, will report on his promotional activities and will serve as moderator during a panel discussion on all aspects of lime stabilization. Others participating in this discussion will be L. J. Minnick, G. & W. H. Corson, Inc.; R. M. Slater, Ash Grove Lime and Portland Cement Company; J. S. Offutt, United States Gypsum Company; R. B. Martin, Mississippi Lime Company; and Robert S. Boynton, N.L.A. general manager.

Other speakers scheduled for the meetings include the following: Robert Pflaumer, president, American-Marietta Corporation; John C. Best, former vice-president, National Gypsum Company; Dr. A. P. Black, University of Florida; B. J. Gee, director, Settle Limes, Ltd., England; S. X. Bessen, sales manager, Komline-Sanderson Company; Walter C. Voss, professor emeritus, Massachusetts Institute of Technology, and architectural consultant; and J. M. Cooper, N.L.A. tax counsel.

Extracurricular activities include a golf tournament, a steak fry on the beach, a cocktail party and banquet, and a deep-sea fishing trip.

N.W. Metals-Minerals Meeting Of A.I.M.E. Set for May 3-5

The annual Pacific Northwest Regional Metals and Minerals Conference of A.I.M.E. (American Institute of Mining, Metallurgical and Petroleum Engineers) will be held this year in Seattle at the Olympic Hotel, on May 3, 4, and 5.

Technical papers in many fields will be read by leaders of research and industry, among whom will be Grover J. Holt, AIME president-elect, and general manager of the Ore Mining Department of the Cleveland-Cliffs Iron Company, Ishpeming, Mich. Others speakers will include Dr. Desmond F. Kidd, past-president of the Canadian Institute of Mining and Metallurgy, and Dr. J. Gordon Parr, associate professor of metallurgy from the University of Alberta, Edmonton, Alta.

Geology papers will be *Localization of Ore in the Kootenay Arc, The Work of the U. S. Geological Survey in the Pacific Northwest, Tectonic Patterns of the Western United States,* and *Granites of Magmatic Origin as Distinguished from Granites of Metasomatic Origin.*

Rounding out the Mining Branch sessions will be four talks on industrial minerals. A mineral industries education session is also scheduled.

X-ray diffraction equipment demonstrations at the University of Washington campus and industrial plant tours are on the program for Saturday morning.

Building Research Institute To Hold Annual Meeting At Niagara Falls, Ontario

The Fifth Annual Meeting of the Building Research Institute, technical society for the building industry, has been scheduled for May 20, 21, and 2, at the Sheraton-Brock Hotel, Niagara Falls, Ontario, according to an announcement released by William H. Scheick, executive director of the organization.

The program includes a board of governors meeting on May 20, technical sessions with individual speakers and panel discussions, and the annual banquet and cocktail party.

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Handles every electrode for hard-surfacing and welding...

Yet costs less to buy and operate...

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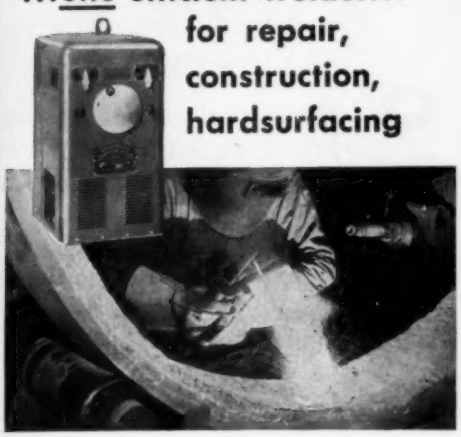

Every repair and hardsurfacing job can now be handled at new low cost with Lincoln Idealarc. To simplify welding, your operator has *both* AC and DC currents at his fingertip. And he can select the *best arc* ... soft arc or forceful arc which ever suits the job best.

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"I'm burning these ten-spots," said Hodge,
Burning bills in his big truck garage,
"To show how we lose,
When a new truck we choose,
Without first having checked on Dodge!"

QUICK QUIZ FOR TRUCK BUYERS

Try this quick quiz before you buy your next truck—and you'll get a better truck for your money:

Q. **What truck line offers you *today's lowest prices* on such popular models as the ½-ton panel, the 1-ton express, and the 1½- and 2-ton stakes?**

Q. **Which truck line has the largest cabs?**

Q. **Which has the greatest driver visibility?**

Q. **Which has the shortest turning radius?**

The answer is "Dodge"—leader for the last 39 years. And this year "Dodge" is the answer to virtually every question you can ask that has to do with lower cost haulage or delivery.

You'll find Dodge trucks are the best answer, too, on price. For Dodge trucks are priced so competitively that no one can beat your Dodge dealer's deal.

When time comes to buy your next truck—get the answers that will lead you straight to today's best truck value—Dodge.

DODGE
Job Rated
TRUCKS
WITH THE *FORWARD* LOOK

Get the Dodge Dealer's Deal Before You Decide

Why Monterey Sand Co.'s CAT D6 Tractor is*

THE CHOICE OF EXPERIENCE

This D6 has a lot to live up to. Its predecessor, another Caterpillar Diesel Tractor, worked 10,000 hours before it needed an overhaul. On the strength of this performance, Monterey Sand Co., of Monterey, Calif., bought the D6.

The new D6 works 16 hours a day, six days a week, stockpiling and loading sand used for sandblasting and filtration. After a little more than 1000 hours on the job, how does it measure up to its rugged predecessor? "We're delighted with the D6, and with the service from our local dealer," says Robert E. McDonald III, a partner in the firm.

The Caterpillar D6 Tractor is built to outlast and outwork any other tractor in its class. On tough jobs in pit or quarry, Caterpillar's exclusive oil clutch cuts costs. It reduces the need for clutch adjustments, prolongs clutch life, and steps up operator efficiency because it provides easier shifting.

The D6's Caterpillar-built four-cycle diesel engine develops 75 drawbar HP—and can do it efficiently and without fouling, thanks to its simple and tinker-free fuel injection system. Other long-life features include hardened track shoes to stand up to hard work around rock, and highly efficient filters and seals that keep lubricants *in* and grit *out* of engine and running parts.

The D6 is available with straight or angling bulldozer blade to fit *your* operation. Your Caterpillar Dealer—who provides prompt, skilled service and parts you can trust—will be glad to demonstrate. Give him a call today.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

R. L. Walsh Dies in N. Y. After Career of 30 Years On Universal Atlas Staff

Raymond L. Walsh, 65, retired assistant vice-president and chief engineer of Universal Atlas Cement Company, died on Feb. 22 at a hospital in New York City after a brief illness.

Raymond L. Walsh

Mr. Walsh, who had been associated for more than 30 years with the cement company, a U. S. Steel Corporation subsidiary, retired on December 31, 1955. He had been connected with the company's engineering and new construction program for many years and upon retirement had been retained by the company in a consulting capacity.

A native of Chicago, he was a graduate of electrical engineering at Illinois Institute of Technology. He joined Universal Atlas at Chicago in 1925 as assistant electrical engineer, became electrical engineer in 1929, assistant chief engineer in New York in 1944, chief engineer in 1953, and was appointed assistant vice-president and chief engineer on February 1, 1955, a post which he held until his retirement.

Mr. Walsh was a member of the American Institute of Electrical Engineers, the Association of Iron and Steel Engineers and had participated in Portland Cement Association activities.

OLYMPIC PORTLAND CEMENT OPENS DISTRIBUTING CENTER

A $600,000 distributing plant has been completed by the Olympic Portland Cement Company, Ltd., north of the Spokane Street bridge on Harbor Island in Seattle. The new facility was formally opened on March 16.

Outstanding features of this new addition to Seattle's industrial skyline are the four 10,000-bbl. silos towering six stories above the ground.

The cement arrives at the distributing center on the Duwamish River *via* a closed metal barge from the firm's plant at Bellingham. It is then pumped from the barge to the storage silos through a 200-ft., 8-in. diameter seamless steel pipe. All conveying of cement at the new facility is by the "Air Slide" method.

Bulk loading facilities are among the most modern yet devised, according to B. B. Pelly, vice-president of Balfour, Guthrie & Co., Limited, managers and sales agents of Olympic. Two trucks may be loaded at one time from two silos each. It takes ten minutes for a truck to receive a 120-bbl. load.

Special scales weigh the load on each axle, then cut off the flow when the predetermined axle loads have been delivered. This permits maximum loading without danger of overloading or improper loading. A plant-wide dust collector system virtually eliminates the dust problem associated with cement loading.

Adjoining the bulk storage facility is a new packaging plant. The new packer machine is supplied from all four bulk silos. Sacked cement is loaded onto trucks at the rate of 1,000 sacks per hour by a reversible conveyor.

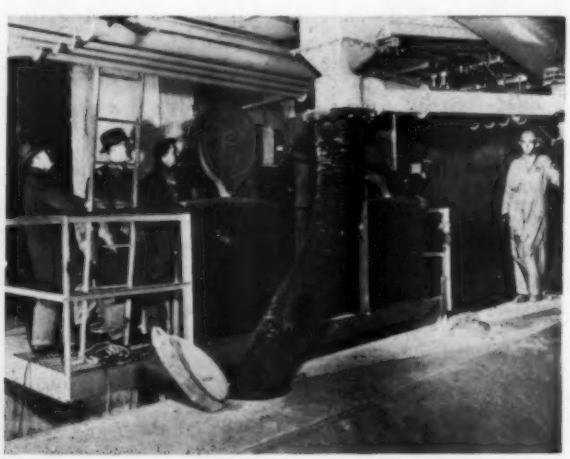
The Harbor Island location is ideally located to serve major routes south, east, and north of Seattle.

American-Marietta Company Plans Alabama Cement Unit

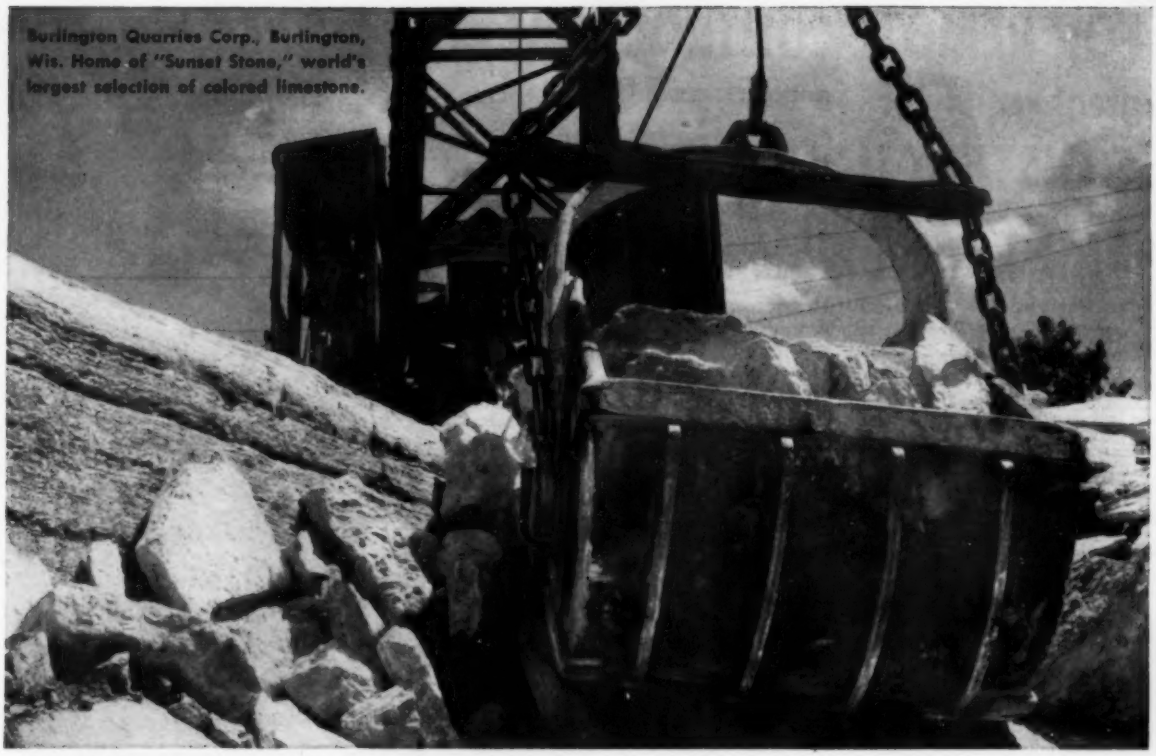
After a recent directors meeting in Chicago, it was announced by the American-Marietta Company that a new cement production unit will be installed at the Roberta, Ala., plant. A part of a company-wide $15,000,000 expansion program, the new unit will increase the capacity of the Southern Cement Company Division by 60 percent. Completion is scheduled for early 1957.

Southern Cement was acquired by American-Marietta last November and was consolidated in January with the Keystone Lime Works, which was purchased at that time by American-Marietta.

A general view of Olympic's new distributing plant, with the bulk cement barge and derrick at the dock (foreground). Note the facilities for loading two trucks simultaneously.



The scales at the new plant of Olympic Portland Cement weigh the load on each axle as the bulk cement truck is being filled. In this way the maximum capacity can be used without overloading.



Burlington Quarries Corp., Burlington, Wis. Home of "Sunset Stone," world's largest selection of colored limestone.

"Draglines give 10,000 Hours of Trouble-Free Performance with Cities Service C-300 Motor Oil!"

Greasing of Dragline Bearings Cut 90%—Burlington Quarries reports about switch to Cities Service Trojan H-2 Grease. "Pump in Trojan H-2 and it stays!" they say.

How to Make Beautiful Sunset is an art for which Burlington Quarries is famous. Here, colored "Sunset" stone is cut by one of their wire saws.

... And Trojan H-2 Multi-Purpose Grease cuts greasing of bearings by 90%, reports Burlington Quarries Corporation.

At Burlington Quarries, every man, every piece of equipment is kept constantly busy, hurrying to meet the nationwide demand for Burlington's famous "Sunset" colored limestone.

Draglines get an especially tough workout because Burlington Quarries uses them to quarry their stone instead of having it quarried out by hand with stone cutters. "But thanks to Cities Service C-300 Motor Oil and its high detergency, we've operated for over 10,000 hours without one bit of trouble," says Burlington.

Another Cities Service product that's been a tremendous help to their operation is Trojan H-2 Multi-Purpose Grease. Before they started using it, someone would have to go out every morning and pump grease into the bearings of draglines. But then, with Trojan H-2, they'd start pumping and it would push out grease that had been put in before. It soon became evident that Burlington could cut down greasing of bearings by 90%, because when you pump in Trojan H-2 Multi-Purpose Grease, it stays there!

If you're not getting that kind of results from your lubrication, talk with a Cities Service Lubrication Engineer. Chances are he can help you. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

FOR REMOTE CONTROL JOBS on a great variety of CONSTRUCTION EQUIPMENT

TRU-LAY *Flexible* PUSH-PULLS

are Dependable and Accurate even under the most adverse conditions. They perform effectively under extremes of Heat or Cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls means the virtual Elimination of Maintenance.

Widely Used on Construction Equipment

Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on Tractors and their accessories, Power Shovels, Winches, Road Graders, Road Oilers, Dump Trucks, Snow Plows, Engine-driven Pumps, Rock Crushers, etc.

On Construction Equipment these dependable Push-Pulls are used for the remote control of Hydraulic and Air Valves, Brakes, Clutches, Transmissions, Throttles, Chokes, Governors, Power Take-Offs, and on many other applications.

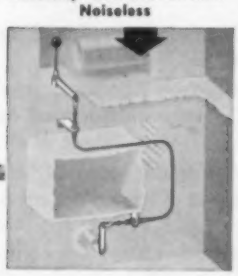
TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances up to 150 feet or more.

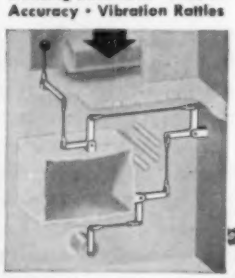
For full details, write for DATA FILE.

***Advantages** of Tru-Lay Push-Pull flexibility and simplicity are pictured below*

TRU-LAY PUSH-PULL
Simple • One Moving Part
Life-Time Service • Life-Time Accuracy • Low over-all Cost
Noiseless

MECHANICAL LINKAGES
Complex • Many Parts
Many Points of Wear • Increasing Back-Lash • Loss of Accuracy • Vibration Rattles





"Solid as a rod but *Flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions as shown in the picture at the left . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, Accurate, Adaptable, Rugged . . . they are the ideal remote controls for Construction Equipment.

Our DATA FILE will answer your further questions
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H. E. Seifert Named Head Of Process Engineering Div. Organized by Solite Corp.

Harry E. Seifert, formerly director of the Bureau of Industrial Hygiene of the Virginia Department of Health, recently was named to head

Harry E. Seifert

the new process engineering division of the Southern Lightweight Aggregate Corporation, which manufactures Solite in Virginia and the Carolinas. The division will market a process designed to control industrial air pollution.

The process, a unique wet dust collector, was developed by the production department of the corporation to meet its own needs in the collection of atmospheric dust from smoke stacks of its kilns, where slate is subjected to about 2,000 deg. F.

The St. Lawrence Cement Company, which is presently erecting a major plant at Clarkson, Ontario, is planning a new quarrying operation at Uhthoff, it has been reported by the Georgian Bay Development Association. To supply part of the Clarkson plant's needs, St. Lawrence has exercised options on 250 acres of land in that area, and has indicated plans to quarry 1,000 tons daily for shipment to the new plant.

● Correction

We regret that a portion of a sentence in *Sintering and Lightweight Aggregates* (Part I) on page 105 of our February issue was omitted. The corrected sentence reads as follows: "If the material will sinter at the 2.2 cu. *yd. rate, the actual machine capacity will be* 1,320 *cu. yd.* per day." The portion in italics was omitted.

Amazing new electronic "inspector" detects slightest imperfections in wire rope

This new inspection machine literally "sees through" wire rope and detects any imperfections that may occur in the manufacturing process. It inspects every inch of rope, 360° around, and *all the way through!* If an imperfection occurs, the machine instantly records it on a chart, squirts paint on the rope, lights a light and alerts the operator to correct the flaw.

In the preliminary tests using wire rope containing specimen broken wires, the electronic "inspector" proved 100% effective. It didn't miss one. These tests prove to us that this device will give the regular inspector a superior tool which will work continuously and will "see" all.

To our knowledge, American Steel and Wire Division is the first wire rope manufacturer to recognize the possibilities of this electronic inspection device as an *extra* step in quality control that will assure better, more uniform wire rope.

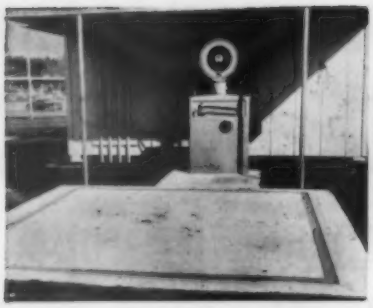
AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL



It Pays To Check On New TOLEDO *Hi-Weigh* TRUCK SCALES

Guard against doubtful truck weights that are so costly in money and good will . . . in your dealings with customers, with vendors, with highway enforcement officials. Check the load on *new* TOLEDO Hi-Weigh Truck Scales! Engineered for today's heavy duty needs . . . choice of two-section, four-section or axle load in full range of models. New design means lower installation costs . . . plus long-life Toledo accuracy and durability. All Toledo Hi-Weigh Scales available with Toledo Printweigh for recording weights on tickets, strips, or sheets. Toledo Scale Company, Toledo 1, Ohio.

Send for Literature
Bulletin 2417

NEW ECONOMY IN INSTALLATION . . . These BIG four-section scales are built to weigh the heaviest and largest highway vehicles to meet needs today . . . and tomorrow. Toledo engineering has integrated lever, weighbridge, and pit design to achieve high strength combined with economical, long-life installation.

SERVICE Factory-Trained 200 Cities

TOLEDO®
HEADQUARTERS FOR SCALES

Natl. Gypsum Subsidiary To Mine, Mill Asbestos At Big Canadian Operation

Melvin H. Baker, board chairman of National Gypsum Company, Buffalo, N. Y., has announced that development work will begin soon on a new multimillion-dollar asbestos mine and plant at Thetford Mines, 75 miles southwest of Quebec City, Que.

According to the announcement, the new mine and plant will supply asbestos fiber to National Gypsum Company's three asbestos-cement plants at Millington, N. J.; St. Louis, Mo.; and New Orleans, La.

National Gypsum last year purchased a tract of land from Bell Asbestos Mines Ltd., a subsidiary of Turner-Newall, London. The company since has acquired additional land and now owns a 500-acre tract.

National Gypsum has two other Canadian operations and 37 plants in the United States. The new mine and plant will be operated under the name of National Asbestos Mines Ltd., a wholly owned subsidiary of National Gypsum Co. It is located five miles east of Thetford Mines.

Robert S. Coleman has been named manager of the new operation. The project is expected to be completed in 1958.

$5,000,000 Phosphate Facility Planned by Idaho Concern

Central Farmers Fertilizer spokesmen have announced that plans are being made for the installation of a $5,000,000 phosphate mining and processing operation this spring near Montpelier, Idaho. Full operation is scheduled for 1958.

According to Taylor Darden, manager, 250 persons will be employed eventually at the plant, and a part of the facility may be in operation next year.

Preliminary engineering work for the plant, which will be located on a 2,375-acre site at Georgetown, 12 miles north of Montpelier, is in progress, and contracts will be let in the immediate future.

WILLIAM MARKS has been named vice-president and secretary of the Permanente Cement Company.

The 1956 annual meeting of the Empire State Sand, Gravel and Ready Mix Association is scheduled to be held in Elmira, N. Y., on June 12 and 13. Convention headquarters will be at the Mark Twain Hotel.

Model 543. No machine or method can equal the low cost loading of this Barber-Greene loader. High travel speed, high capacity and finger tip discharge control save job time, man time, truck time.

Cut loading costs the continuous way

In a Massachusetts sand and gravel pit, a Barber-Greene Model 543 Bucket Loader handles 900 tons of ¾″ stone every day—easily tops all other methods in truck loading operations.

The 543 is ideal for the all-day-long loading operations of one truck after another because its continuous flow maintains maximum capacity regardless of the skill or zeal of the operator.

Its simple operation makes it easy for drivers to load their own trucks. A hydraulically controlled swivel conveyor has the reach to load highest and longest trucks and trim the load to full capacity every time. And this versatile loader can be easily converted into a coal, snow or leaf loader.

Model 550 removes windrows in a hurry . . . with a capacity that keeps ahead of all trucks normally available. This light, highly maneuverable machine reduces windrow loading to lowest cost. Self-propelled at 10 m.p.h., with a turning radius of 8′ 6″.

Model 82A moves 1200 yards in 8 hours. That's the record of a Barber-Greene in a New York building and supply yard. Handles sand, stone, coal and other materials at high capacities. Easy operation permits driver to load his own truck.

Model 582 speeds topsoil stripping. Crawler mounted for sure footing on all soft bases, and equipped with a hydraulic swivel conveyor, the 582 is the fast, profitable way to load from stockpile, windrow or bank or to make light excavations.

56-38L

Write for literature on any loader in the Barber-Greene line

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Fines Supply Augmented By Processing Overflow From Dual Sand Drag

When the 200 t.p.h. plant of Century Rock Products went into operation near El Monte, Calif., a little more than two years ago (see PIT AND QUARRY, June, 1954, page 93), there was a high percentage of fine sand in the shallow deposit. Recently, as the pit was excavated more deeply, more coarse material began to be encountered, and changes were planned to recover as much of the extreme fines as possible during the washing process.

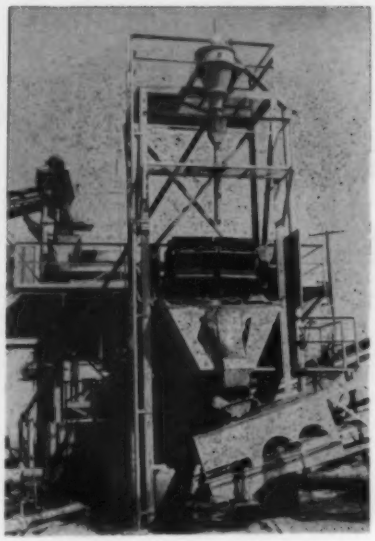
The accompanying illustration shows graphically how this was accomplished. High above the discharged end of the 60-in. by 24-ft. dual sand drag, the firm installed a 25-in. H. B. Large Engineering Company Duraclone to process the overflow formerly wasted at the bottom end of the drag classifier. A 4-in. pump powered by a 20-hp. motor now forces the overflow pulp through the pipe seen (left), up to the wet cyclone at the top of the picture. Clean fines in the 30- to 200-mesh range are extracted in the Duraclone underflow and drop directly to the head-pulley end of the sand drags for blending into the finished sand circuit.

Overflow from the top of the cyclone is carried by the pipe at the right to the waste ponds. Handling a volume of about 700 g.p.m., the cone is able to extract about 5 t.p.h. of clean fines to correct the deficiency which had developed in the finished sand product.

This installation was designed and engineered by F. E. MacDonald, superintendent, who is currently busy with the design and erection of the new Star Rock Products plant near Santa Ana, Calif. Both the Century and Star operations are owned by the San Gabriel Valley Ready Mix-Concrete Company of Pasadena.

37th Annual A.G.C. Meeting Held in New York Feb. 13-16

The 37th annual convention of the Associated General Contractors of America, Inc., was held February 13 to 16 at the Waldorf Astoria hotel in New York City. Significant resolutions adopted at the close of the four-day meeting concerned the following points: the safeguarding of public funds through the recommendation that public works contracts be let to the lowest responsible bidder after public advertisements; the urgent necessity for Congress to enact an expanded highway program; opposition to inclusion of the



The dual sand drag installed by Century Rock Products at El Monte, Calif.

Davis-Bacon Act provisions in wage fixing with respect to highway program legislation; an appeal for firm prices on materials good for the duration of any particular project; and a commendation of federal and state highway officials for their efforts in the field of highway maintenance.

Frank J. Rooney, Miami, Fla., and Lester C. Rogers, Chicago, Ill., were elected to the posts of president and vice-president, respectively, of the A.G.C. for 1956. Three occupational divisions of the association also named new officers for the coming year as follows: highway contractors division — Edward O. Earl (San Xavier Rock and Sand Co., Tucson, Ariz.), chairman, and W. Ray Rogers (Rogers and Rogers Construction Co. Portland, Oreg.), vice-chairman; building contractors division—E. J. Wheeler (Frank Messer and Sons Inc., Cincinnati, O.), chairman, and Charles B. Solomon (George B. H. Macomber Co., Boston, Mass.), vice-chairman; heavy construction and railroad contractors division—William H. DeButts (C. F. Lytle Co., Sioux City, Ia.), chairman, and F. S. Oldt (F. S. Oldt Co., Dallas, Tex.), vice-chairman.

A 500-t.p.d. operation producing high-quality silica sand has recently been established by the Pacific Clay Products Company near Camanche, Calif. Situated in an area of early-day gold mining activity, the new silica sand plant has been erected to process the estimated 22,000,000 tons of material in a 450-acre tract. Constructed at a cost of $300,000, the operation will employ about 16 men.

Oregon Portland Cement Engaged in Plant Expansion To Double Present Output

Work has been started on the $3,114,572 expansion of the Oregon Portland Cement Company's plant at Lime, Oreg., to double its capacity to 1,000,000 bbl. of cement per year.

Completion date will be December 15, when the plant will begin meeting cement requirements for the Idaho power dams which are now under construction on the Snake River. The plant at Lime will also provide cement for future downstream development of the Snake River.

The machinery installation will include a 350-ft. rotary kiln, heavy rock grinding and finished-cement-grinding machinery, electrical equipment, and slurry basins.

This is the fourth major new construction project undertaken by Oregon Portland Cement since World War II. Since 1947 the company has installed one new kiln at its plant at Oswego, and has expanded its quarry at Lime. A second kiln installation is planned for the Oswego plant. This kiln, which will cost approximately $3,000,000, is scheduled for completion this spring.

General Portland Cement Co. Plans $10,000,000 Operation

Plans for the construction of a $10,000,000 cement plant in Dade County, Fla., have been announced by Smith W. Storey, president of the General Portland Cement Company.

The new installation, a 1,250-000-bbl. per year wet-process plant, should help to eliminate the need to import cement from abroad and from other states, according to Florida's Governor LeRoy Collins.

General Portland's proposed plant is to be erected on a 2,490-acre tract 19 miles west of Miami. Construction is to begin in the immediate future, and it is expected that the new facility will be completed early in 1957. This plant will be equipped with the most modern types of machinery and automatic controls; and provision will be made for further expansion.

Another plant operated in Florida by General Portland Cement is located at Tampa (Hookers Point). This installation has been in operation since 1927.

PHILIP H. JACOBY, Easton, Pa., former superintendent of General Crushed Stone Company's Easton plant, died recently at the age of 76.

Serious Alkali Reactions Subject of A.I.M.E. Panel At Meeting in New York

At its annual meeting in New York in February the American Institute of Mining, Metallurgical and Petroleum Engineers devoted a session to deleterious reactions between alkalies and aggregates in concrete, methods of producing low-alkali cement, and methods of inhibiting the reaction in the concrete.

The panel session, which was organized by T. D. Murphy, chairman of the Cement, Lime and Gypsum Committee, included six speakers and was moderated by C. F. Clausen, director, Manufacturing Process Department, Portland Cement Association, Chicago.

Cement Aggregate Reactions: What Is the Problem? was the title of a paper presented by Mrs. Katharine Mather, chief, Petrography Section, Concrete Division, Waterways Experiment Station, United States Corps of Engineers, Jackson, Miss. *Mechanical Features of Cement Aggregate Reaction* were discussed by Dr. L. S. Brown, senior research petrographer, Portland Cement Association, Chicago. *Mechanisms of Alkali Aggregate Reaction* were covered by R. G. Pike, physical chemist, Cement and Concrete Material Section, National Bureau of Standards, Washington, D. C.

E. M. Barker, operations vice-president, Calaveras Cement Company, San Francisco, Calif., discussed *Control of Alkalies in Portland Cement. Factors in the Selection of Concrete Aggregates* were presented by John A. Ames, industrial geologist, Baltimore & Ohio Railroad, Traffic Department, Baltimore, Md. *Physico-Chemical Properties of Fly Ash as Related to the Cement Aggregate Reaction* was the title of a study presented by L. J. Minnick, vice-president, G. & W. H. Corson Inc., Plymouth Meeting, Pa.

Pacific Coast Aggregates Buys Santa Cruz Portland Cement

Pacific Coast Aggregates, Inc., recently completed the transactions involving the purchase of the operating assets of the Santa Cruz Portland Cement Co. Stockholders of the latter organization voted on February 6 to liquidate the company and sell the business and related assets to Pacific for $12,000,000 cash.

It was announced that Robert A. Kinzie Jr. will be plant manager at the Davenport plant, and Otto Tretten will be sales manager of the Santa Cruz Cement Division of Pacific Coast Aggregates. The brand name Santa Cruz Portland Cement will be retained, and it is planned to improve and modernize the plant facilities.

Nuclear Research Subsidized By 19 Leading Industries

Nineteen industrial firms including the General Portland Cement Company, Victor Chemical Company, Clark Equipment Company, and Dewey and Almy Chemical Company, have joined in a co-operative venture to determine how nuclear research can be of value in their operations. They are participating in the nuclear research program at Armour Research Foundation of Illinois Institute of Technology in Chicago.

A nuclear reactor, the nation's first designed specifically for industrial research, is nearing completion at Illinois Tech. It will be housed in a $1,250,000 physics and electrical engineering research building now under construction for the foundation on Chicago's south side.

Each firm is contributing $20,000 toward the construction and initial operation of the $700,000 reactor facility. Armour Research Foundation funds will finance the remaining cost.

R. W. Winters of Ideal Newly Promoted Executive Succumbs after Surgery

Within a few hours after his promotion from the post of general sales manager of Ideal Cement Company to vice-president, administration, Robert W. Winters died of complications following an emergency operation in a Denver, Colo., hospital.

On February 28 the board of directors of the cement company named Mr. Winters vice-president in charge of administration. Word of the promotion was sent to him in the hospital, where he was apparently recovering satisfactorily from surgery. He died the same day.

Mr. Winters joined Ideal on September 15, 1948, having been associated previously with a mining machinery firm in Birmingham, Ala., and then with the Portland Cement Association in Kansas City, Mo.

After 30 years of shaft mining in the Boron, Calif., area, the Pacific Coast Borax Company, division of Borax Consolidated, Ltd., has initiated open-pit mining in an $18,000,000 development, it was recently announced. The project includes construction of new facilities for processing sodium borate.

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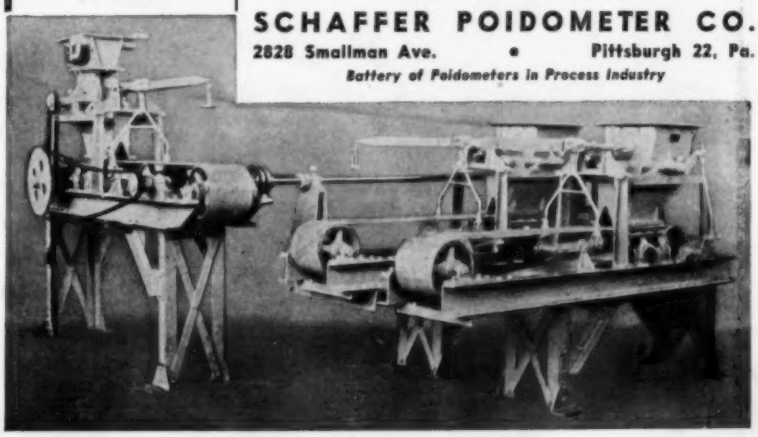

Here's the New R-15 "Euc"

that sets a new high in 15-ton Rear-Dump Performance!

DUMPS FAST AND CLEAN

Smooth body interior and tapered rear chute assures clean shedding of the load well back of the rear wheels—an important feature for dumping into hoppers or over the edge of waste banks. Lycoming Silica Sand Co. in Pennsylvania has used 15-ton "Eucs" for years and now has added two R-15 Rear-Dumps to their hauling fleet.

STAY ON THE JOB LONGER

Victorville Lime Rock Co. in California uses 2 Model R-15 "Eucs" for hauling rock and overburden. Rugged body and frame withstand the impacts of loading, hauling and dumping heavy excavation in construction, mine and quarry service.

Built for heavy off-the-highway service, 15-ton Rear-Dump "Eucs" have paced the field for over 20 years. They've reduced hauling costs on hundreds of the toughest jobs in mine, quarry and construction work . . . delivered "plus" performance year in and year out.

This model R-15 incorporates the engineering advances, the easy operation and maintenance features, resulting from unequalled field experience with other Euclid Rear-Dumps of the same capacity. It provides the dependable work-ability that means more payloads per day at lowest cost per ton or yard moved.

Have your Euclid dealer give you full details on this new 15-ton Rear-Dump and the complete line of Euclid earth moving equipment. He'll be glad to show you why so many users have proved for themselves that ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

The R-15 is your BEST BET for Lower Hauling Costs!

Advanced design results from 20 years of leadership in building off-highway Rear-Dumps

Some of the OUTSTANDING FEATURES of the R-15

- 10½ yd. body 30,000 lb. payload
- 218 h. p.
- loaded top speed of 25 m.p.h.
- hydraulic booster steering
- air assist clutch
- free floating springs
- 14.00 x 24 drive tires (16.00 x 25 optional)

POSITIVE CONTROL OF DUMPING

Double-acting 3 stage Euclid hoist and hydraulic system gives the operator fast, positive control of the body position at all times. Dumping angle of the body, in fully raised position, is 68°. Body, frame and hoist are designed and built as an integral unit. McDowell & McDowell are using six R-15 "Eucs" to haul heavy excavation at a big plant site job in Nashville, Tennessee.

SPEED AND STABILITY

The 5 speed transmission and Euclid planetary axle provide a top speed of 25 m.p.h. with full 15 ton payload . . . 27 m.p.h. with 16.00 x 25 tires. Free floating Euclid spring suspension gives maximum stability empty or loaded under all road conditions . . . permits faster safe travel speeds. Dale Bloom had a fleet of 6 Rear-Dump "Eucs" on this Kansas Turnpike job—2 of them the Model R-15.

EASY OPERATION

Full width cab offset to left for maximum vision, air assist clutch, booster steering, 218 h.p. engine, fast acting hoist, free floating springs and fully adjustable seat contribute to driver comfort and easy operation. Four of these new Rear-Dumps worked on a highway relocation job of W. J. Menefee Construction in Missouri.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Hemeon Associates Formed For Study of Air Pollution In All Major Aspects

Organization of a firm for general consultation on all aspects of air pollution was announced recently by Wesley C. L. Hemeon, engineering director of Industrial Hygiene Foundation and Senior Fellow of Mellon Institute. Mr. Hemeon will resign from his present post to assume the position of director of the new firm, to be known as Hemeon Associates. Headquarters offices and laboratory will be in the Loeffler Building at 121 Meyran Avenue, in the Oakland section of Pittsburgh.

Heading a staff of specialists in various aspects of air pollution will be George F. Haines Jr., as chief engineer. Mr. Haines is also a fellow of Mellon Institute. He has been associated with Mr. Hemeon for the last ten years in various researches on dust control, air pollution, and industrial hygiene.

The staff will be supplemented by a team of consulting associates which will completely embrace the fields of chemistry, engineering, meteorology, plant physiology and pathology, and wind tunnel aerodynamics.

Mr. Haines was graduated in chemical engineering from Bucknell University in 1943 and joined Mellon Institute immediately after graduation. He has been on the staff of Industrial Hygiene Foundation since 1946 and has made notable contributions in research projects.

W. C. L. Hemeon

Mr. Hemeon, a native of Boston, Mass., was graduated from Massachusetts Institute of Technology in 1926. Immediately before moving to Pittsburgh he was in charge of industrial dust control engineering activity for the Massachusetts State Department of Labor. Since 1943 he has been engineering director of Industrial Hygiene Foundation and is well known for his researches and numerous publications on industrial ventilation, dust control, and air pollution. These include books on industrial ventilation and outdoor air pollution.

George F. Haines Jr.

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eliminate "blinding" and "clogging" of wire screens, thus making beating and brushing practices obsolete. Designed for heavy-duty service, HANCO Heaters with Quick Change Attachments are quickly installed and easily adapted to new or existing screen installations with such features as large capacity secondary terminal, a 16 step temperature changer, dust enclosure compact, exclusive overload protector.

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Chain engineers in Jeffrey district offices are on call to help you specify this quality chain which is normally available from distributor or factory stocks. For further information, write to The Jeffrey Manufacturing Co., Columbus 16, Ohio.

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CF&I Claymont, Delaware

Open Hearths producing ingots and steel plate.

CF&I Roebling, New Jersey

Open Hearths producing ingots, blooms, billets, and rods.

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CF&I Claymont, Delaware

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CF&I Clinton, Mass.

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Wire Rope—Wire Rope Slings—Wire Clothesline—TV Guy Wire—Aircraft Control Cable.

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High Carbon Steel Wire (Hard Drawn, Spheroidized and Tempered)—Rope Wire—Tire Bead—Hose Wire—ACSR Core Wire—High Carbon Spring Steel Wire (All grades, tempers and finishes)—Regulator, Sash Balance and Flapper Valve Wire.

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CF&I So. San Francisco, Calif.

Galvanized and Annealed Merchant Wire—Galvanized and Annealed Stone Wire—Bale Ties—Baling Wire—High and Low Carbon Wire—Galvanized and Annealed Wire—Copper Coated Wire—Rope Wire—Welding Wire.

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Estimated Minerals Report Shows Output, Value Rise In Panama, Virgin Islands

Output of sand and gravel and of stone in the Panama Canal Zone in 1955 was estimated at 290,000 tons valued at $370,000. Stone accounted for nearly 70 percent of the output and value; sand and gravel accounted for the remainder.

The Panama Canal Company produced sand and gravel for structural and paving uses. Output and value were greater in 1955 than 1954.

Production of basalt by the Canal Zone Government and the U. S. Army was estimated at 200,000 tons, valued at $265,000, exceeding the previous 1954 record in both quantity and value.

In the Virgin Islands stone was reported from St. Croix Island in 1955. Production of basalt last year amounted to 4,000 short tons, valued at $18,000, compared with an output of 3,939 tons, valued at $17,134, in 1954.

Efficiency, Economy Topics Of "How to Do It" Bulletin

Rateonics Corporation, Dallas, Tex., described as "utility cost consultants", are offering to clients a service which is outlined in a 28-page bulletin entitled *How to Get More Results from 10 Percent Less Power Costs.*

Based on the realization of the slogan, "Use what you lose!", the brochure contains instructions for the use of the power saving "estimator" in costs for electricity, gas, prime movers, the boiler room, refrigeration, water, steam, compressed air, mechanical transmission, and miscellaneous items.

The book is not for sale, but may be obtained from Rateonics.

Washington News Letter

(*From page* 12)

appear to have less to lose because their strength in the South has never amounted to much, violent outbreaks could solidify a great sentiment everywhere against them because of the historical accident that the Supreme Court happened to issue an inevitable decision during Republican incumbency.

In this interim period before the party conventions both sides are still searching for issues around which support can be rallied. Without an economic issue, this is a hard problem. It is hoped that the absence of serious domestic issues will not result in mud-slinging and invective.

Champs with a new power punch!

These Task-Force heavyweights pack the biggest power punch in Chevrolet truck history with a completely new Loadmaster V8 and revolutionary new Powermatic Drive!

Modern short-stroke V8's are standard in *all* new Task-Force L.C.F.'s and heavyweight haulers—with the big new 322-cu.-in. Loadmaster in top-tonnage L.C.F.'s and in other models rated up to 32,000 lbs. G.V.W. and 50,000 lbs. G.C.W.! It's Chevrolet's Taskmaster V8 in other heavy-duty models!

Get new Powermatic Drive, a 6-speed automatic specially built for heavy-duty jobs, for the most flexible and efficient application of engine power! Optional at extra cost in all conventional heavy- and most medium-duty trucks. See your Chevrolet dealer for details on the right model for your job! ... Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET **NEW CHEVROLET TASK·FORCE TRUCKS**

Anything less is an old-fashioned truck!

New Machinery and Equipment

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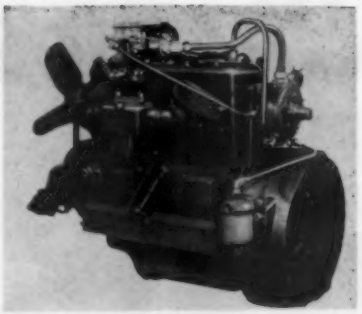
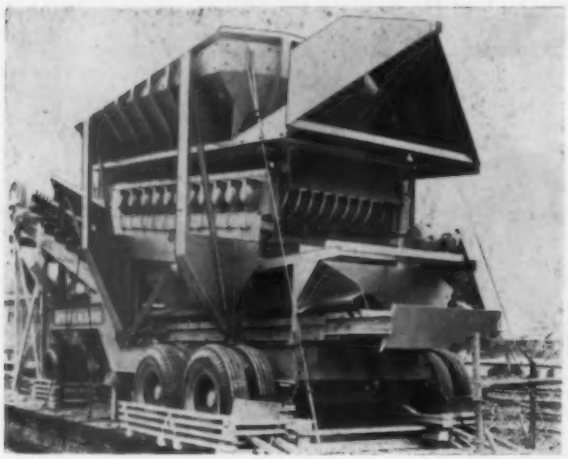
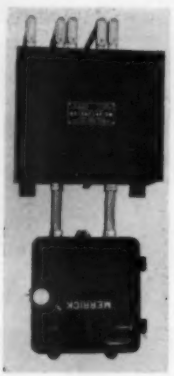


● LPG and natural gas conversions of "Jeep" L-Head and F-head industrial engines are now available from Willys Motors, Inc. Advantages are said to include the prolonged use of lubricating oil without thinning; reduction of carbon deposits; longer life of the engine; high octane at low cost. ▲(54)

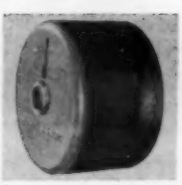


● Feeding and scalping functions are performed in one operation by the "Wobbler" feeder, a development of Universal Engineering Corporation. The "Wobbler" has a capacity of 2500 tph, requires only 15 hp., and is self-cleaning and self-lubricating. It is said to eliminate vibration, stress, and noise. ◀(51)

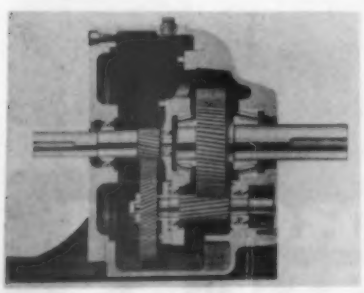


● The new Type "H" Weightometer, the latest model automatic conveyor scale developed by the Merrick Scale Manufacturing Company, incorporates the feature of continuous integration. The Type "H" is said to have accuracy, sensitivity to load variation, and steady balance. It is designed for heavy-duty continuous service. ◀(55)

● The largest production model shovel-crane to be produced by Link-Belt Speeder Corporation, the 3 cu. yd. K-608, has been added to their line. Designed for 3-yd. shovel operation, it has a rated crane lifting capacity of 75 tons at 12 ft. radius. The K-608 features Speed-O-Matic hydraulic control and hydraulic-actuated steering clutches. ▶(52)



● The HT-50 through shaft magnetic brake, manufactured by Stearns Magnetic, Inc., can be mounted on NEMA frames 56-C, 66-C, 182 and 184. The motor shaft permits drives off both ends. ◀(56)



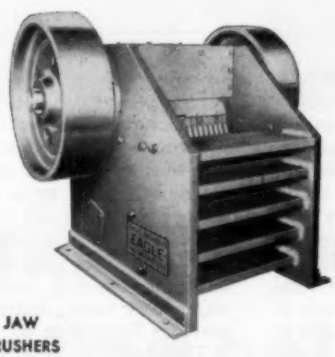
● Link-Belt In-line Helical Gear Drives are made in accordance with A.G.M.A. standards, with capacities to over 100 hp. and ratios to 292:1. In a rigid one-piece housing, which prevents oil leakage, either two or three gear trains effect moderate or high speed reduction. The minimum number of parts is said to reduce wear and maintenance. Splash lubrication of all moving parts assures efficient operation at all speeds. ▲(53)

● The new CCS Wooldridge "Corbette" has capacities of 7.5 cu. yd. struck and 10 cu. yd. heaped. Featuring a new hydraulic "Gear Steer", fluid coupling drive, and special tractor design enabling it to assist in push loading companion units, it is said to achieve fast loading and dumping, with easy control and maneuverability. ▲(57)

PRODUCE MORE STONE AND GRAVEL WITH MOBILE

Eagle Crushers

Portable Eagle crushing plant operated by Harry Miller Contracting Co., Suffield, Ohio, delivers pit run sand and gravel at rate of 100-125 yds. per hour for cushioning concrete super-highway nearby. Whole layout can be moved as gravel is consumed. (Power source is electric generator set—could be gasoline or diesel direct drive.)



JAW CRUSHERS

HAMMER-MILLS

Eagle Crushers—both jaw type and hammermill—bear the characteristic marks of the experienced manufacturer—simple design, durable construction, ease of servicing. Eagle originated the one-piece, electrically welded frame—has pioneered in the field of portable, compact, crusher plants like the one above.

There is a range of sizes in the jaw crusher—and a variety of styles (skid-mounted, trailer, portable, roadside). Likewise, the hammermill or impact breaker is made in several sizes and for various applications—is particularly well suited to limestone reduction.

EAGLE CRUSHER CO., Inc.

JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

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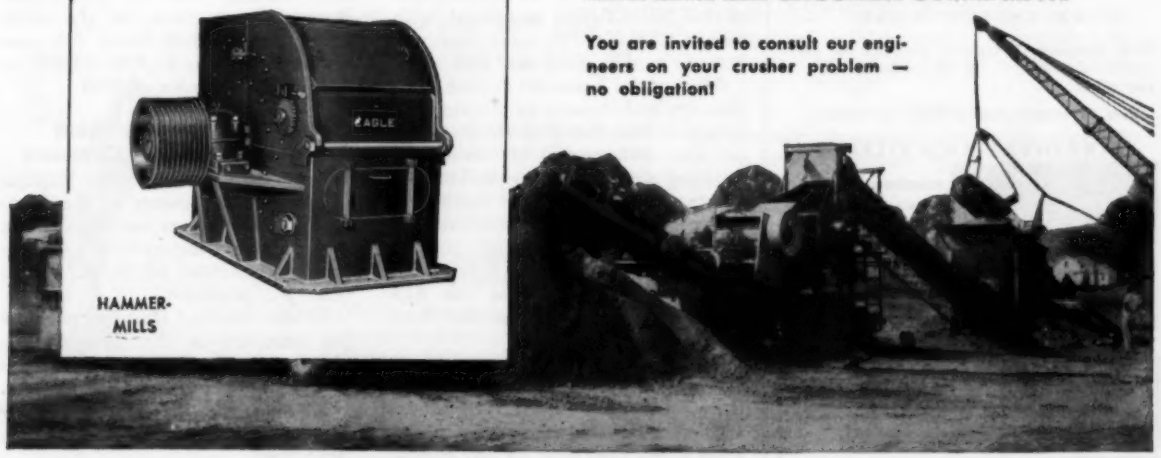
You are invited to consult our engineers on your crusher problem — no obligation!



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CORROSION-RESISTANT

Don't look no more—specify **CLEVELAND** Wire Screens for YOUR next installation.

Available in all corrosion-resistant metals and alloys, such as:

Stainless Steel
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CLEVELAND Wire Screens are designed for longer life and better service.

Woven to individual specifications for every purpose in any size or dimension, such as Vibrating Screen Sections, Filter Segments, Strainer Elements, Centrifuges.

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Filter Segments & Strainer Elements to your individual needs . . . in all commercial metals and alloys.

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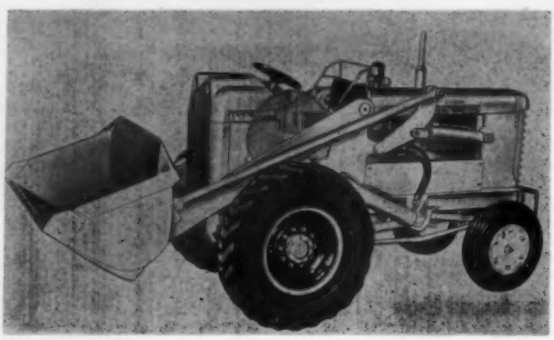
Custom-built and adapted to individual needs. Available in all commercial metals and alloys.

Write for Bulletin 6, 7, and 8

The CLEVELAND WIRE CLOTH & MFG. Co.
3576 E. 79th St. Cleveland 5, O.

● Two new Payscraper models are now in production at the International Harvester Company—the 262 hp. "75" and the 172 hp. "55". Capacity of the 75 has been increased to 20 cu. yd. heaped and that of the 55 to 15 cu. yd. heaped. Other changes now engineered in the new units are: straight-back bowl; lower draft frame; greater visability; new cerametallic clutch facing (on the "75"); higher apron lift; bigger push block; and improved ejector. ↑ (58)



● Another addition to Tractomotive's line of front-end loaders, the 1½-cu. yd. TL-11, has front-wheel drive for better traction and rear-wheel power steering. A clutch-type transmission permits changes in the direction of travel without shifting gears. Overall length of the TL-11 with the bucket in carrying position is 15 ft. 4 in. ← (59)

February Construction Outlays Reflect Seasonal Decline

Actual outlays for new construction declined seasonally in February, 1956, to $2,700,000,000, but matched the previous February record set in 1955, according to preliminary estimates prepared jointly by the Departments of Commerce and Labor. February activity brought the total for the first 2 months of this year to $5,500,000,00, virtually the same as the January-February, 1955, figure. On a seasonally adjusted basis, expenditures for new construction thus far in 1956 were at an annual rate of $41,500,000,000, compared with the $42,300,000,000 total that was actually put in place last year.

Most of the 5 percent decline from January to February in private construction was due to a continuation of the downtrend in residential building activity that began late last summer. Because of the decline in the number of new homes started last fall and early winter, private spending for residential building in February dropped below the $1,000,000,000 mark for the first time since April, 1954.

The value of work put in place on private nonresidential building set a new February record. The industrial construction figure also represents a new high level for any month, exceeding the January, 1956, figure by 2 percent.

Although all major types of construction contributed to the 4 percent decline in public spending over the month, most types decreased at a rate more moderate than usual for the season. Expenditures last month for highway construction, public educational building, and sewer and water work were greater than in any previous February.

Thus far in 1956, private spending for new construction totaled $4,100,000,000, slightly more than the January-February total in 1955. Public construction outlays, on the other hand, were slightly lower this year than last, totaling $1,400,000,000 for the first two months of 1956.

United States Sulphur Sold To Texas-Adams Oil Company

The sale of United States Sulphur Company, Inc., owner of the country's largest known surface deposit, located near Dunton, Colo., was recently announced by H. A. Hershfield Jr., president.

It was reported that the purchasing company is the Texas-Adams Oil Company of Denver and New York, and that the three claims involved in the transaction will be worth about $6,000,000 when fully developed.

Shovel-Crane owners!

Working a hard 8 hour day... getting only 6½ hrs. output?

Operator fatigue can cost you important money. Here's how to minimize it!

THINK about the job you're working now. How much *more* money could you make if operators—good as they are—suffered little if any end-of-the-shift-letdown . . . never had to climb out and unlimber "cramping" arm and leg muscles?

Fingertip-operated Link-Belt Speeder power hydraulic controls minimize fatigue

With Speed-o-Matic—the true power hydraulic control system—shovel-crane response is fast, positive, easy. So easy that operators are actually "eager" to push the rig to its limit—all shift long! And what a limit!

You've never seen any machine that can compare with a Link-Belt Speeder for cat-quick agility and long-lived, bulldog stamina. Report after report shows these rigs account for up to 25% or more output per shift.

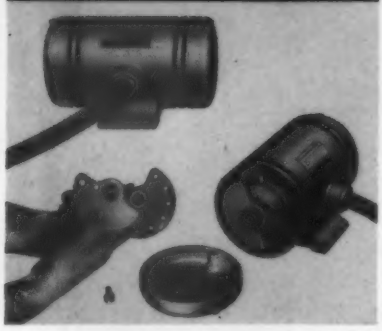
Seeing is believing

The precision construction, the quality materials and the advanced engineering that have gone into today's Link-Belt Speeder speak for themselves. All we ask you to do is see your distributor and judge for yourself. Be as critical as you like! No shovel-crane on the market today—crawler or rubber-tired, ½ to 3-yd, 8 to 60-ton capacity—can compare. Visit your distributor today or write for literature—LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA. 13,980

LINK-BELT SPEEDER

Builders of a complete line of crawler and rubber-tired shovel-cranes.

NEW ADJUSTABLE ELECTRIC VIBRATOR



NO WEIGHT CHANGING

A brand new silent electric vibrator that lets you vary the force of vibration without complicated weight changes, The Cleveland Vibrator Company now offers adjustable cams, permitting a change of vibrator force over a 3 to 1 range in a matter of seconds.

With this new bin vibrator you can adjust vibration to exactly fit your bins and type of material you are handling. No problem when you use a bin for different materials; just change the weights a notch. It's absolutely silent too.

Write for detailed information.

Air or Electric
Portable or Permanent
Silent or Standard

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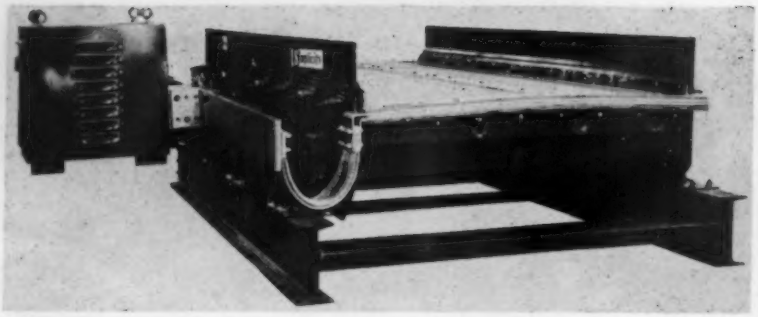
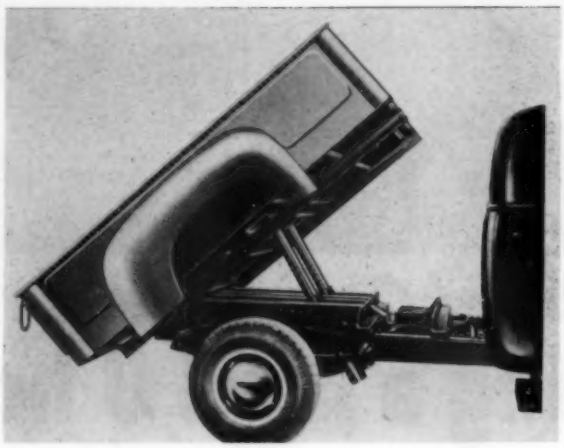


● The Simplicity 4- by 8-ft. Model "SS" heated screen has been developed for handling damp or sticky materials. The 35 sq. ft. of available screening surface, with a fully balanced, high-speed, short-stroke assembly, provides positive action, distributing the vibration equally over the entire deck area. Current is applied end to end for higher resistance, resulting in even distribution of more heat with a lower operating current. There is no inductance heating of side plates and thus little or no heat loss. The transformer is a dust-tight unit, including a built-in overload switch. This screen is designed to heat either stainless or carbon steel cloth at no extra cost. Transformer may be mounted to customer's specifications. ←(60)

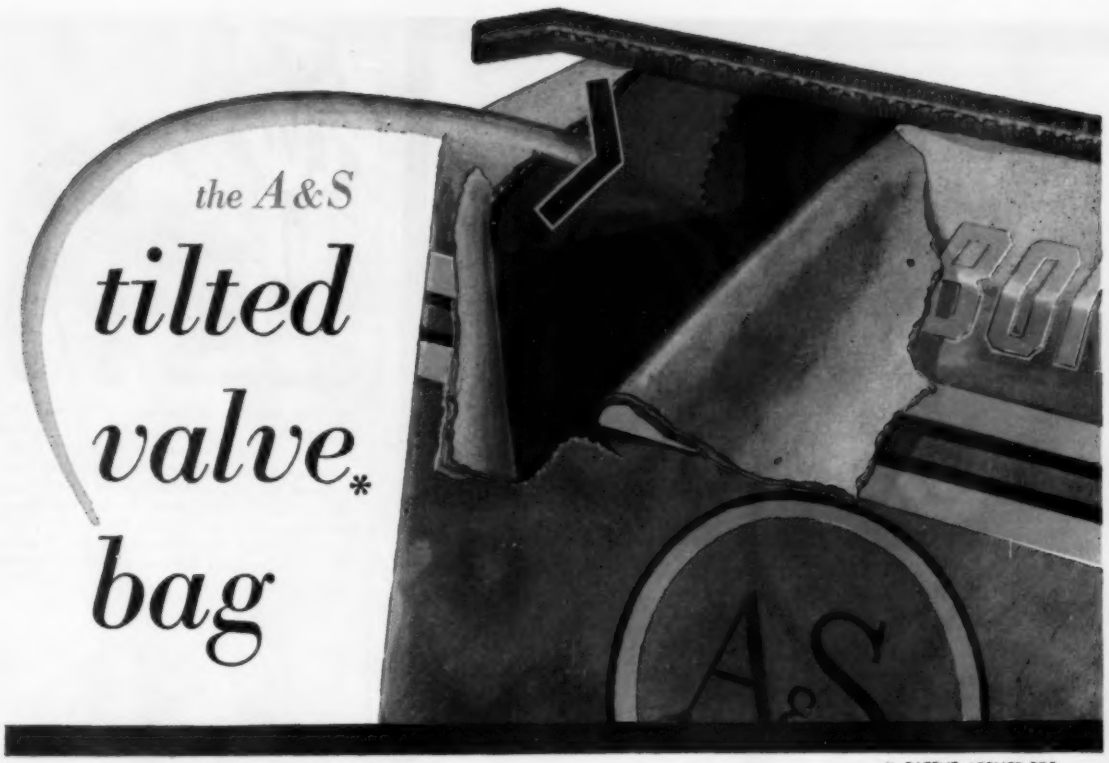


● Two new hoists, called the "300 Series", have been designed by Hercules Steel Products Company for mounting on ½-, ¾-, and 1-ton trucks with straight or raised frames. Advantages of the 300 series are said to be maximum lifting efficiency, fast dumping action, positive hoist control, low mounting height, and easy installation. ←(61)

● A 600-ft. rotary portable compressor, the Airvane, has been introduced by the Joy Manufacturing Company. The new rotary features the Thermal By-Pass temperature control system and a controlled-velocity filter-separator unit which removes oil from compressed air. Low center of gravity and a turning radius of 13 ft. are combined for maneuverability. →(62)

the A&S

tilted valve bag*



* PATENT APPLIED FOR

A NEW DEVELOPMENT FOR ROCK PRODUCTS!

The A & S Tilted Valve Bag is a must for manufacturers of lime, plaster, clays, cement and similar products. With the Tilted Valve, these bags are faster to put on the filling spout and are self-sealing in the true sense of the word . . . as the product reaches the top of the bag, the valve is automatically pinched shut to form a more positive, sift-proof seal — far more efficient than previous designs of this type.

The Tilted Valve can be furnished on any sewn valve multiwall bag, and what's more, there is no upcharge for bags with this improvement!

Arkell & Smiths multiwall bags are outstanding in design and printed in sparkling inks and have long been a favorite for shipping finely divided materials, both inert and hygroscopic. This new "Tilted Valve" feature is just one more reason why thrifty packers buy from A & S.

Let A & S take over your packaging problem today!

FOR ADDITIONAL INFORMATION, WRITE TO ARKELL & SMITHS, PACKAGING DIVISION, CANAJOHARIE, NEW YORK.

You can see . . .

HERCULES ENGINES are popular... but let's talk performance.

Popularity isn't the only reason Hercules Engines power these well-known makes of air compressors. The main reason these companies select Hercules Engines is that they provide dependable power—engineered to the requirements of the compressor.

Air compressors, like other types of equipment, are designed by the manufacturer for specific capacities. They need an engine that will produce the rated power as well as a power plant to fit the operating features of the application.

Then too, owners appreciate the dependable service and "trouble-free" operation of Hercules Engines. They know that with routine maintenance, their Hercules powered equipment will give them years of "top-notch" performance.

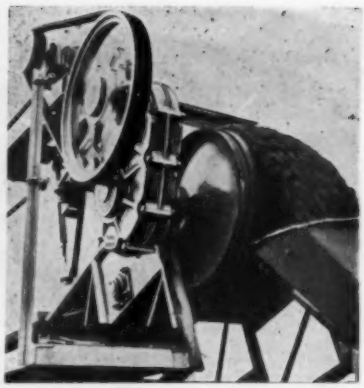
With the addition of the recently announced G.O. Series (Gasoline Overhead Valve) and the D.D. Series (Direct Injection Diesel), Hercules customers have an even greater selection of internal combustion engines and power units. More than 90 different models are available from 3 to 500 H.P. for operation on natural gas, gasoline or diesel fuel.

Hercules Sales-engineers will be glad to assist you in solving your particular power problems. Drop us a letter, we'd be most happy to work with you—of course, there's no obligation.

All Types of Dependable Power

Gasoline Diesel

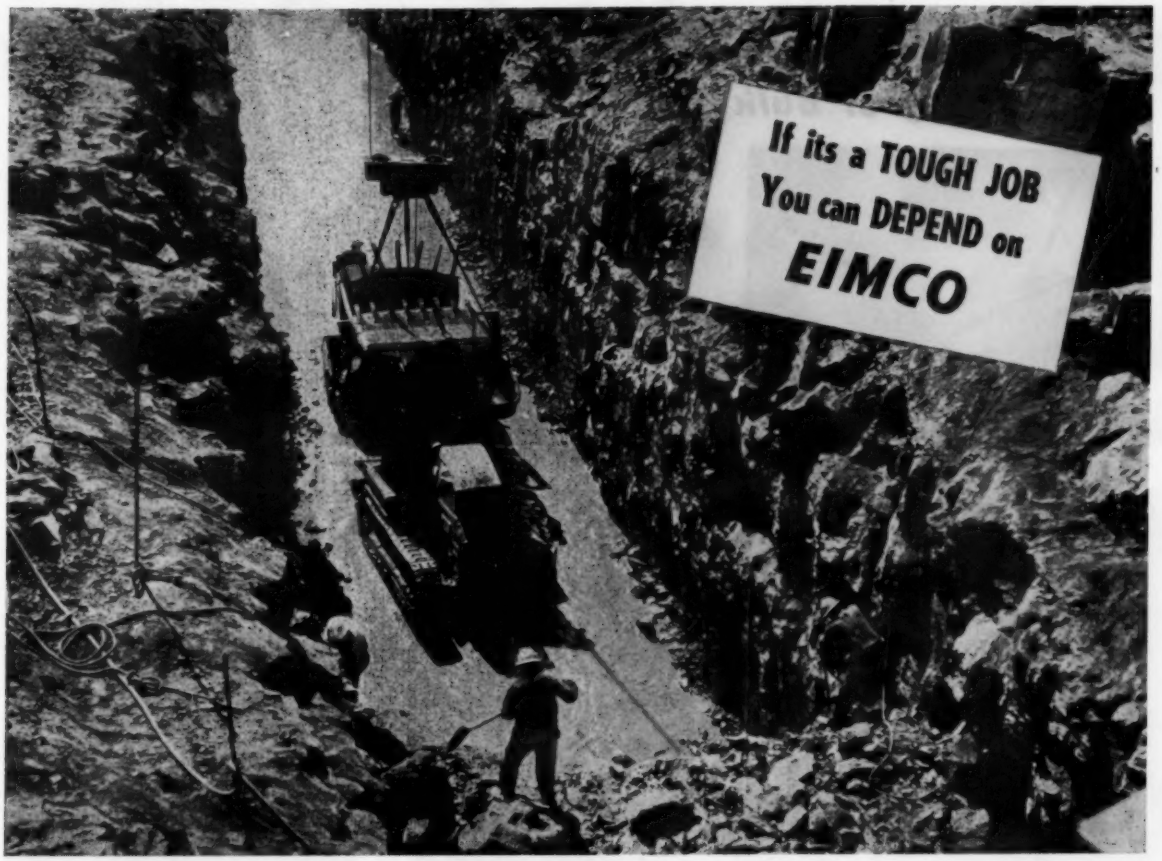
HERCULES MOTORS CORPORATION, Canton, Ohio



● With the recent addition of Models No. 8 and No. 11 to its Torque-Arm line, Dodge Manufacturing Company now offers shaft-mounted speed reducers with capacities from 1 to 60 hp. and output speeds from 12 to 365 rpm. No foundation, flexible couplings, or sliding base is required for these reducers. The unit is driven through a V-belt drive. Dodge Taper-Lock Sheaves permit any speed ratio desired. ↟'(63)

● Seismolog, a portable, lightweight seismograph, is a recent development of Vibration Measurement Engineers. Operated on a 2-section low voltage battery pack designed for the instrument by General Dry Batteries, Inc., the Seismolog records impact vibrations in industry and construction by photographing them automatically. The records are particularly useful in operations involving explosives. ↟'(64)

● Featuring adjustable baffles for control of spread width, this new spreader fits any standard 3 cu. yd. dump body tail gate. All controls are located in the truck cab. It is manufactured by Fairfield Engineering Company. ↟'(65)

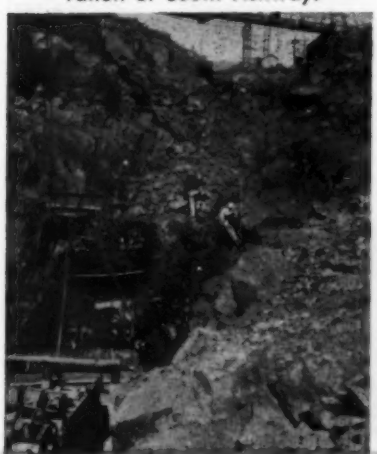


EIMCO KEEPS TOUGH EXCAVATION JOB ON SCHEDULE

Contractor — Montag - Halvorson - Cascade-Austin.

Location — The Dalles, Oregon.

Project — The Dalles Dam — Excavation of South Fishway.



Rock — lava basalt 91,000 cubic yards.

Report — Eimco's 105 Tractor Excavator was purchased for this job after several other types of equipment had been tried and proved either entirely unsatisfactory or incapable of maintaining the desired pace. The fishway (shown above) was excavated in lava basalt (typical of this section) with its characteristic flows and faults. Blasting in the faulted zone left many large blocky pieces of rock.

The method successfully used to excavate the shot rock from the 1500 foot long by 15 foot wide fishway channel which was 16′ deep at one end and 60′ deep at the other is as follows: A 6 yard rock ship was lowered by a crane and held in place by a Koehring Dumptor. It was loaded by the Eimco and hoisted out. "This method proved to be the most satisfactory and economical. Both machines took a terrific beating to get this job done, but to this day no one has been able to suggest a better way of doing it."

When it comes to bidding on a tough job — here are a few factors to consider: (1) Cubic yards of tough rock loaded per hour given proper haulage equipment — the Eimco will handle on a comparable basis with boom type shovels 1½ to 2 times its bucket size. (2) Cost—compare the prices. (3) Maintenance — compare these costs on jobs similar to your own. (4) Versatility — The Eimco moves quickly, easily. (5) Labor — compare the productivity per man hour.

Yes! You too will find Eimco's best for the tough jobs.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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B-178

For Controlled Heavy Tonnage Feeding of Bulk Materials to

Crushers
Dryers
Ball Mills
Rod Mills

SYNTRON

VIBRATORY FEEDERS

Syntron Vibratory Feeders provide controlled, adjustable material flow to match the capacity of processing equipment. Handle most any bulk material . . . run of quarry and crushed rock, hot abrasive materials, gravel, etc. . . . at rates from a few pounds to hundreds of tons per hour. Electromagnetic . . . no mechanical wearing parts. Flat pan or tubular trough models for any feeding operation

Other SYNTRON Equipment of proven dependability

FLOW CONTROL VALVES

Diaphragm type for positive flow control and shut-off of materials from bins, hoppers or chutes.

HOPPER LEVEL SWITCHES

Automatically maintain maximum or minimum amount of materials in bins or hoppers.

Self-Contained ROCK DRILL

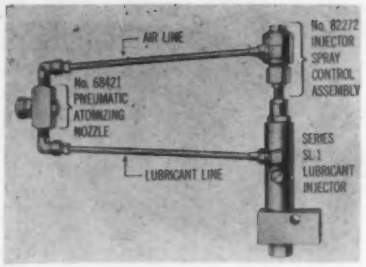
No Air Compressor needed. Speeds drilling, cutting. Self-rotating bit.

TEST SIEVE SHAKERS

For quick accurate sieve analysis. Positive control of time and speed for uniform testing of samples.

Send today for catalogue data—FREE

SYNTRON COMPANY
385 Carson Avenue Homer City, Penna.



● The MistOmatic Spray Control, a new device for automatically applying a controlled, pre-measured quantity of mist lubrication on open gears, chains, rollers, circular saws, and similar surfaces, has been designed by Lincoln Engineering Company. These valves can also be used for spraying lubricants, paint, glue, and similar materials on production lines. According to the manufacturer, MistOmatic valves provide positive, uniform automatic lubrication without waste, eliminate spoilage from drippage of excessive lubricant, conserve man-hours, and reduce fire and accident hazards. ▲ (66)

● The new HI-VI electro-permanent magnetic vibratory feeder developed by Eriez Manufacturing Company, the FE-4, will feed bulk material to pulverizers, grinders, packaging machines, etc., up to four tons (sand) per hour. Installation of the unit, which requires no rectifier, is said to be quickly and easily effected. ▲ (67)

● A new automatic safety controller, which provides warning and prevents damage from abnormal load conditions of any kind on electrically-driven conveyor systems, is manufactured by the Tipp Manufacturing Company. This device, called the Tipp-Tronic, is said to eliminate the need for mechanical safety devices and lubrication. The unit instantly and automatically shuts off the conveyor system at any predetermined load setting. It may also be set up to give warning of impeding trouble before the shut-off stage is reached. ▲ (68)

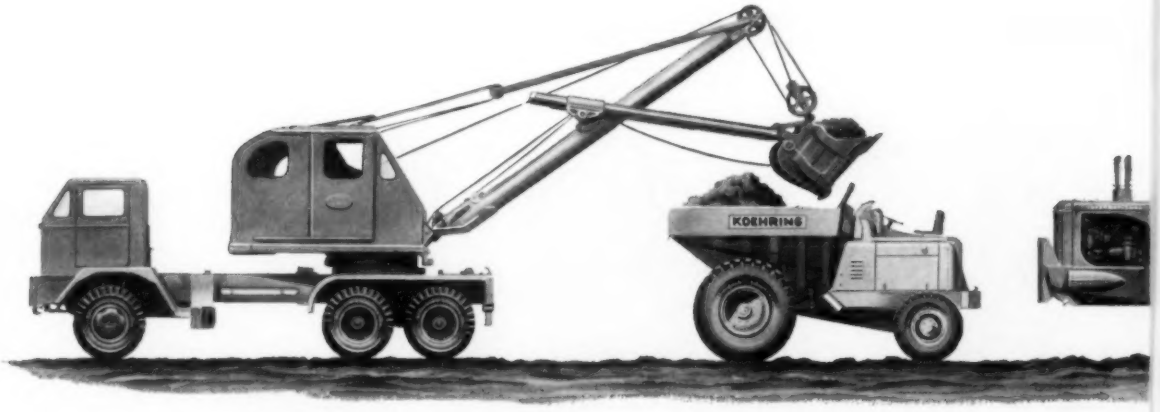
B.F.Goodrich tires han

LeTourneau-Westinghouse Model B Tournapull and Model B Scraper measure 40′-6″, tower 12′-7″. Tournapull can make 90° left and right turns. Scraper holds 25 cubic yards heaped. Tires shown are B. F. Goodrich Super Traction on drive wheels and Earth Mover Traction on trailing wheels.

Chevrolet Task-Force stake truck Model 6
load of 13,300 pounds in a load space measu
B. F. Goodrich All-Purpose tires are design
truck that does a variety of on and off-the

This massive **Mack** LRVSW dumper is designed for mining, stripping and earth-moving projects. 30-ton payloads roll on such tires as the B. F. Goodrich Rock Logger and Universal. Diesel engine develops 400-h.p.

Oliver 4-wheel, open-top twin-cable scrapers in the 4C se
have a cutting blade up to 113″ long, can carry up to
cubic yards of dirt.

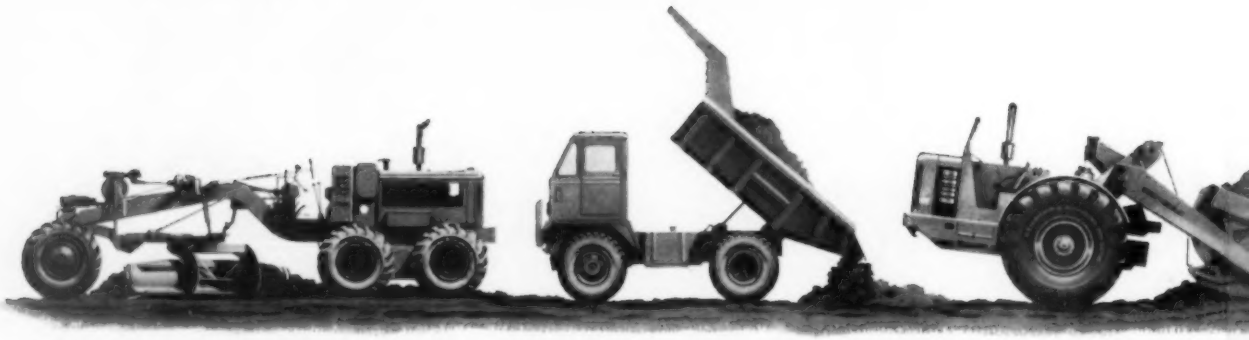


Michigan Model TMDT-16 is a general purpose 12½-ton excavator-crane fully convertible to all standard front end attachments. The boom is 17′-3″ long, has a diameter of 12¾″

Koehring Dumptor unloads 16,500-lb. payload in one second. No turns are necessary at shovel or dump because speeds are the same in forward or reverse.

Lift Page

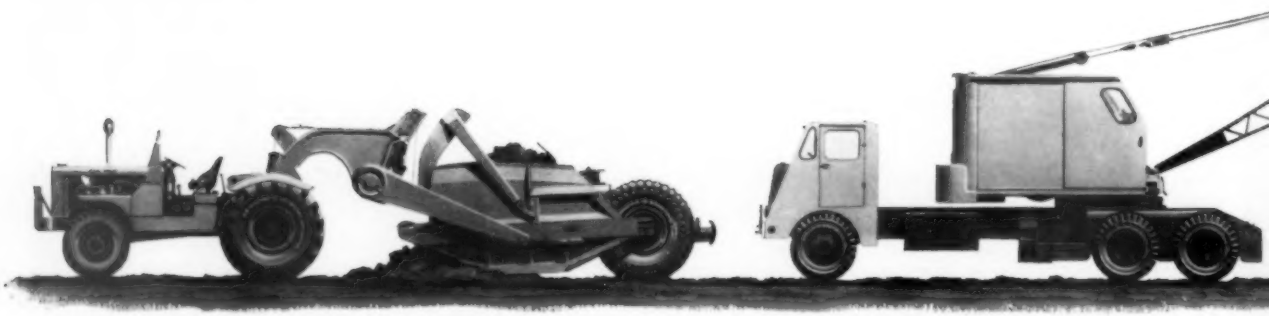
B.F.Goodrich Para



The **Adams** No. 660 Diesel Motor Grader has 8 forward speeds up to 26 miles per hour, 4 reverse speeds up to 13.7 miles per hour. Unit rolls on 14.00-24 Tractor Grader Lug tires.

The body of this **Dart** Model 10-S truck rises to a height of 18 feet in dumping position, dumps at a 60-degree angle. Unit comes equipped with B. F. Goodrich Universal tires.

Double-Safety air brakes, select ing, direct electric starting an cable control are among the **Allis-Chalmers** TS-360 Motor



Caterpillar DW15 tractor with matched No. 15 scraper has 150-horsepower engine. Tires shown are B. F. Goodrich Ribbed Universal (front), Super Traction (drive), Earth Mover Traction (scraper).

Bay City CraneMobile may be used as crane, clamshell, dragline or pile driver. Maximum lifting capacity 25 tons. Will handle booms up to 110 feet plus 30-foot jibs.

Austi drive a right c

These B. F. Goodrich tires keep

ALL-PURPOSE tires work on paved or dirt roads or in the rough on such jobs as logging, sand and gravel hauling, excavating, etc. *All-nylon* or rayon construction. Sizes 6.00-16 through 12.00-24.

UNIVERSAL tires are designed for power wheels on trucks and tractors that pull trailer equipment or for free-rolling wheels in severe service. *All-nylon* construction. Sizes 7.00-15 through 24.00-29.

TRACTOR GRADER tires deliver power to road graders, tractors and other equipment used in construction and road maintenance work. *All-nylon* or rayon construction. Sizes 9.00-24 to 18.00-26.

EARTH MOVER TRACTION tires are designed for free-rolling wheels on scrapers, earth-moving wagons and other pulled equipment. *All-nylon* construction. Sizes 14.00-20 to 24.00-29.

rade of Power

selective-speed steer-
ng and multiple-disc
the features of the
Motor Scraper.

Attachments for the **Le-Tourneau-Westinghouse** Model C Tournatractor include bulldozer (above), logging winch, tree stinger, scraper, V-type snow plow, root rake and angledozer.

Tubeless tires, power steering and tachometer are standard equipment on this **Ford** transit mix truck in the T-800 series. You have choice of 190-h.p. or 200-h.p. Y-block V-8 engine.

Austin-Western Super 99 Power Grader features 6-wheel drive and 6-wheel steering. Blade rotates 360° and raises 90° right or left. Tires are 13.00-24, 10 ply low pressure.

B. F. Goodrich Universal tires are shown on this **Euclid** Model FFD 34-ton rear-dump truck. Capacity is 28 cu. yds. heaped for payload weight of 68,000 lbs.

ep construction work rolling

SUPER TRACTION tires work in sand, loam and mud on drive wheels of large dirt-moving rigs. For free-rolling wheels in reversed position. *All-nylon* construction. Sizes 18.00-25 to 24.00-29.

ROCK LOGGER tires are built for drive and front wheels on dump and logging trucks, cement mix trucks, quarry and construction machinery. *All-nylon* construction. Sizes 8.25-20 to 14.00-24.

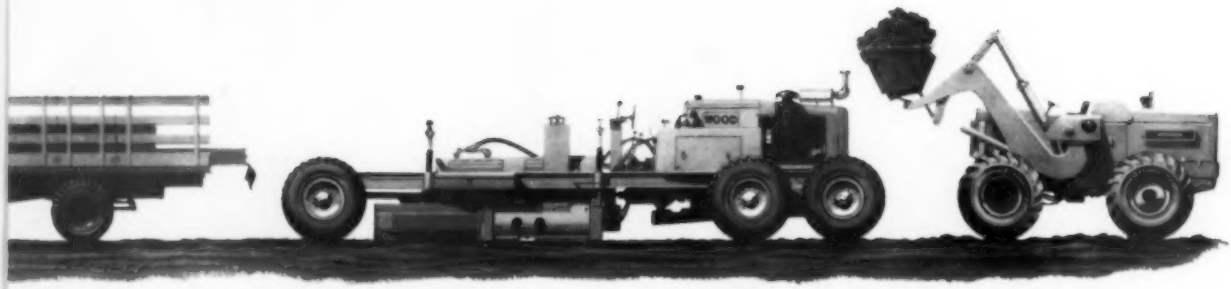
SPECIAL compounding for extra toughness, special tread designs for every kind of work, special *all-nylon* cord bodies that outwear even the extra-thick tread and can be recapped over and over—these are some of the advantages B. F. Goodrich builds into its off-the-road tires. If you want lower operating costs and longer, trouble-free tire service, see your B. F. Goodrich retailer today. On-the-job service is available coast to coast from B. F. Goodrich retailers. *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

Your B. F. Goodrich retailer is listed under Tires in the Yellow Pages of your phone book

B.F.Goodrich
FIRST IN RUBBER

Specify B. F. Goodrich tires when ordering new equipment

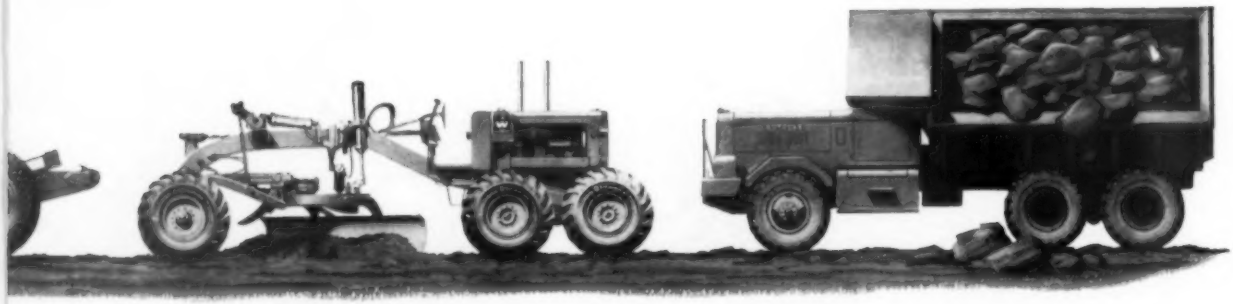
dle the big, tough jobs



09 carries a pay-
ring 144" x 85".
ed for this type
-road work.

Up to ¼ of a mile of 24-foot roadway, 3" thick, can be produced by the **Pettibone Wood** Model 42 Roadmixer in an 8-hour day. This machine mixes cement or asphalt for highway, airport or parking area construction.

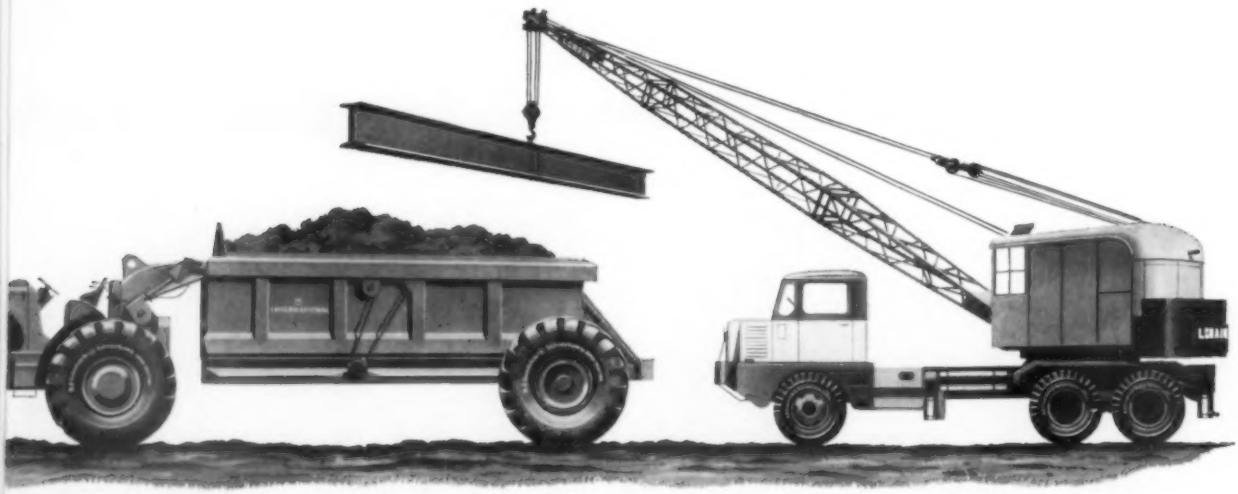
The bucket of this **Hough Payloader** raises to a maximum height of 16'-1" from a digging depth of 12" below the ground. Four-wheel drive, with 14.00-24 tires, provides maximum traction.



ries
7.5

Grading, maintenance, snow removal, scarifying, bank sloping and ditching are just a few of the jobs for which **Huber-Warco** motor graders are designed.

Side-dumping **White** Autocar DC-10364S-OH carries a truck load of 12 cubic yards. Truck weighs nearly 22 tons, rolls on 10 B. F. Goodrich Rock Logger tires.



Haul-road speeds up to 24 mph, fully loaded, are a feature of the **International** Model 75 Paywagon. Tires are B. F. Goodrich Super Traction.

Thew Shovel's Lorain MC-524 Moto-Crane handles everything from loading logs to erecting steel.

simple arithmetic . . .

HENDRIX DRAGLINE BUCKETS

assure greater output at lower cost

It's simple Arithmetic! Hendrix Buckets are built for trouble-free performance, day in and day out. This . . . plus a maximum load every trip . . . assures BIGGER PROFITS on every operation.

A TYPE FOR EVERY DIGGING PURPOSE
¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

PEAK CAPACITY

with

KENNEDY EQUIPMENT

NEW BRAUNFELS, TEXAS,
LIME PLANT
UNITED STATES GYPSUM
COMPANY

General View of Plant Showing KVS 10′ x 150′ Kiln with Preheater Internal Recuperator and Preheater

KENNEDY PRODUCTS

- Gyratory Crushers
- Swing Jaw Crushers
- Tube Mills
- Ball & Rod Mills
- Vibrating Screens
- Rock Feeders
- Air Swept Tube Mills
- Rotary Kilns
- Coolers, Dryers
- Preheaters, Deheaters
- Belts, Conveyors
- Pneumatic Transport Systems
- Asbestos Plants
- Complete Lime Plants
- Complete Cement Plants
- Steam Generators
- Complete Aggregate Processing Plants
- Waste Heat Boilers
- Pulverized Coal Firing Systems

Send for bulletin describing KVS Machinery and Equipment

KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVENUE, NEW YORK, N. Y. • FACTORY: DANVILLE, PA.

OF LIME PER DAY

...for New Braunfels, Texas plant of United States Gypsum Company

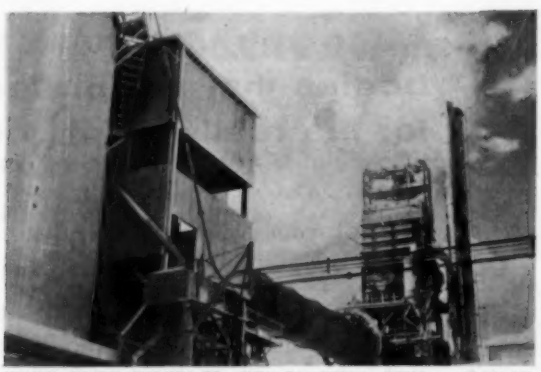
LIME PLANT PRODUCTION BEYOND RATED CAPACITY

One of America's largest lime producers, United States Gypsum Company chose KVS design and equipment for their new plant at New Braunfels, Texas.

Machinery and equipment designed and furnished by KVS includes crushers, screens, conveyors, kilns, preheaters, deheaters. The installation also provides the latest automatic controls and special equipment that permits high temperature "aging lime" — important in achieving highest quality. Also, storage capacity at this plant has been almost tripled.

Whether your plant is large or small, old or new, Kennedy has the machinery and equipment for better products at lower cost. Let us prove . . . with operating facts . . . why KVS machinery is your best buy. Engineering consultation, anywhere, any time.

UNITED STATES GYPSUM CO., NEW BRAUNFELS, TEXAS — STONE PREPARATION PLANT COMPRISING KENNEDY 37½ S GEARLESS CRUSHER, KENNEDY AAA VIBRATING SCREEN AND KENNEDY BELT CONVEYORS



UNITED STATES GYPSUM CO., NEW BRAUNFELS, TEXAS — CLOSE-UP VIEW SHOWING INSTALLATION DETAILS OF KVS 10′ x 150′ ROTARY KILN, PREHEATER, RECUPERATOR AND DEHEATER

UNITED STATES GYPSUM CO., NEW BRAUNFELS, TEXAS — OVERALL VIEW OF STOCKPILE SHOWING OPERATION AND ARRANGEMENT OF CONVEYORS

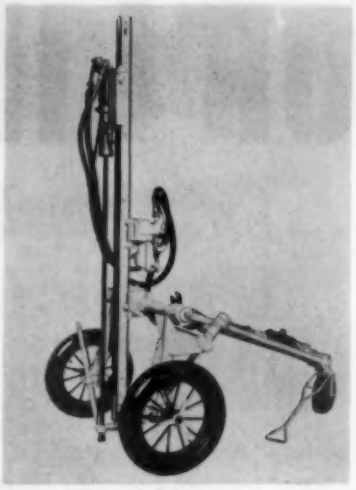
MORE ON-THE-JOB TIME

when you use hoists and bodies that are preferred for the really tough jobs

When it comes to a competitive showdown, MARION bodies and hoists lead the way. In performance . . . in economy of operation . . . in dependability and long life, truck owners have found MARIONS will handle the really tough jobs faster and more profitably. Once you've used a MARION, there's little chance you'll be satisfied with any other dump body and hoist. Get all the job-proven facts today from your nearby MARION Distributor . . . or write direct to the factory

MARION
BODIES AND HOISTS

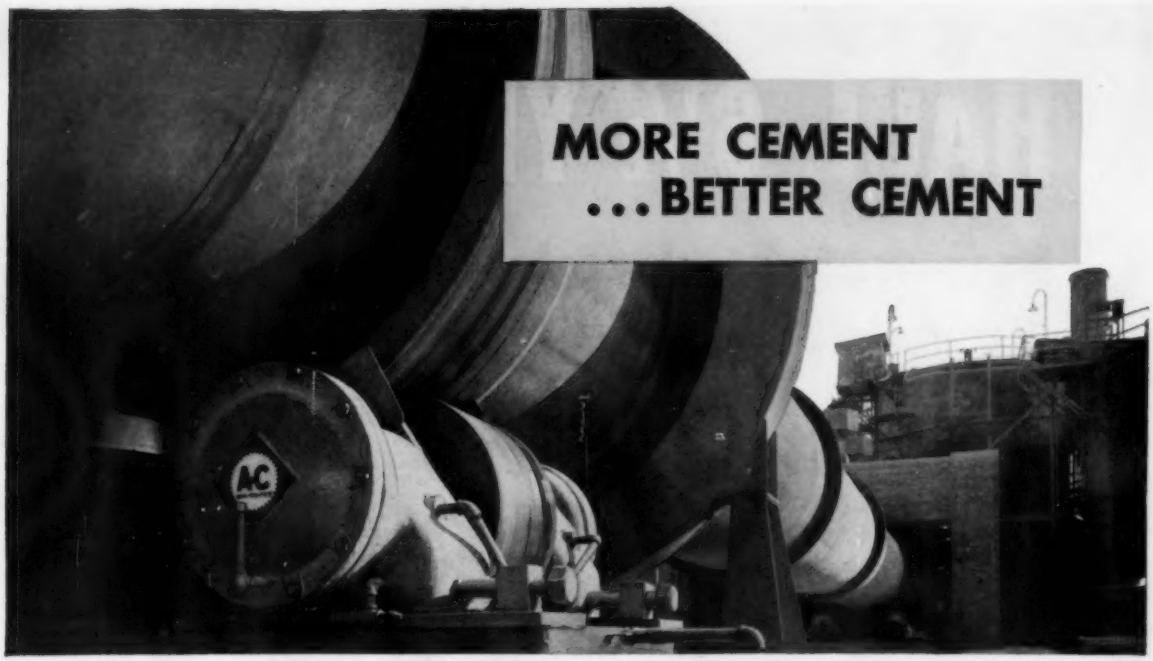
MARION METAL PRODUCTS CO.
MARION, OHIO



● The BW-2 heavy-duty, air-powered wagon drill is now in production at the Thor Power Tool Company. This rig incorporates a newly-designed mast which has grouped, movable controls. The chassis has a re-designed hand crank for raising or lowering the mast, and a positive 90 deg. wheel lock for line drilling. (69)

● The Twin Disc Clutch Company now provides a torque converter for every horsepower range from 40 to 1,000, offering four distinct sizes, with a total of 29 capacities. The new 13,800 Series Torque Converter provides two output arrangements and can be adapted to all engines in the 60 to 600 hp. range by internal blading variations. (70)

● The "Shear Ball", a new method of attaching shovel-crane turntables to crawler or rubber-tire mountings, has been developed by The Thew Shovel Company. It consists of a continuous circle of steel balls sealed in a hardened, precision-ground race, and is said to reduce the need for servicing and periodic adjusting. (71)



Are you set up to meet Volume and Specification demands?

Accelerated construction programs call for a 35% increase in cement production by 1959. You're in for some profitable years if you gear your plant to meet the challenge.

Allis-Chalmers Can Help You and Your Consultants

Evaluating your present process should be your first step in expanding. Here is where Allis-Chalmers — with more than 50 years' experience in building and applying cement-making equipment — can help.

Allis-Chalmers is not only concerned with machinery application, but with overall plant efficiency. Increased grinding and burning capacity — better heat recovery — faster clinker cooling — maximum fuel utilization — lower power consumption — maintenance economy — are all vital considerations. Only with this approach can you achieve capacity increase and quality improvement at the lowest cost.

Yes, you get more . . . more engineering cooperation when you specify A-C.

Allis-Chalmers Rotary Kilns

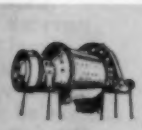
Over half of all cement made in the U. S. is processed in A-C equipment. The reason? Allis-Chalmers has pioneered many major improvements in machinery design. For example, air-cooled kiln feed and discharge ends save rebricking cost and prevent shell distortion. True circle, all-welded construction insures best lining fit, long refractory life. Floating-type riding rings provide flexible support and proper weight distribution.

For complete information, see your local Allis-Chalmers representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-4970

"Coordineered" Equipment for the Cement Industry


Grinding Mills

Vibrating Screens

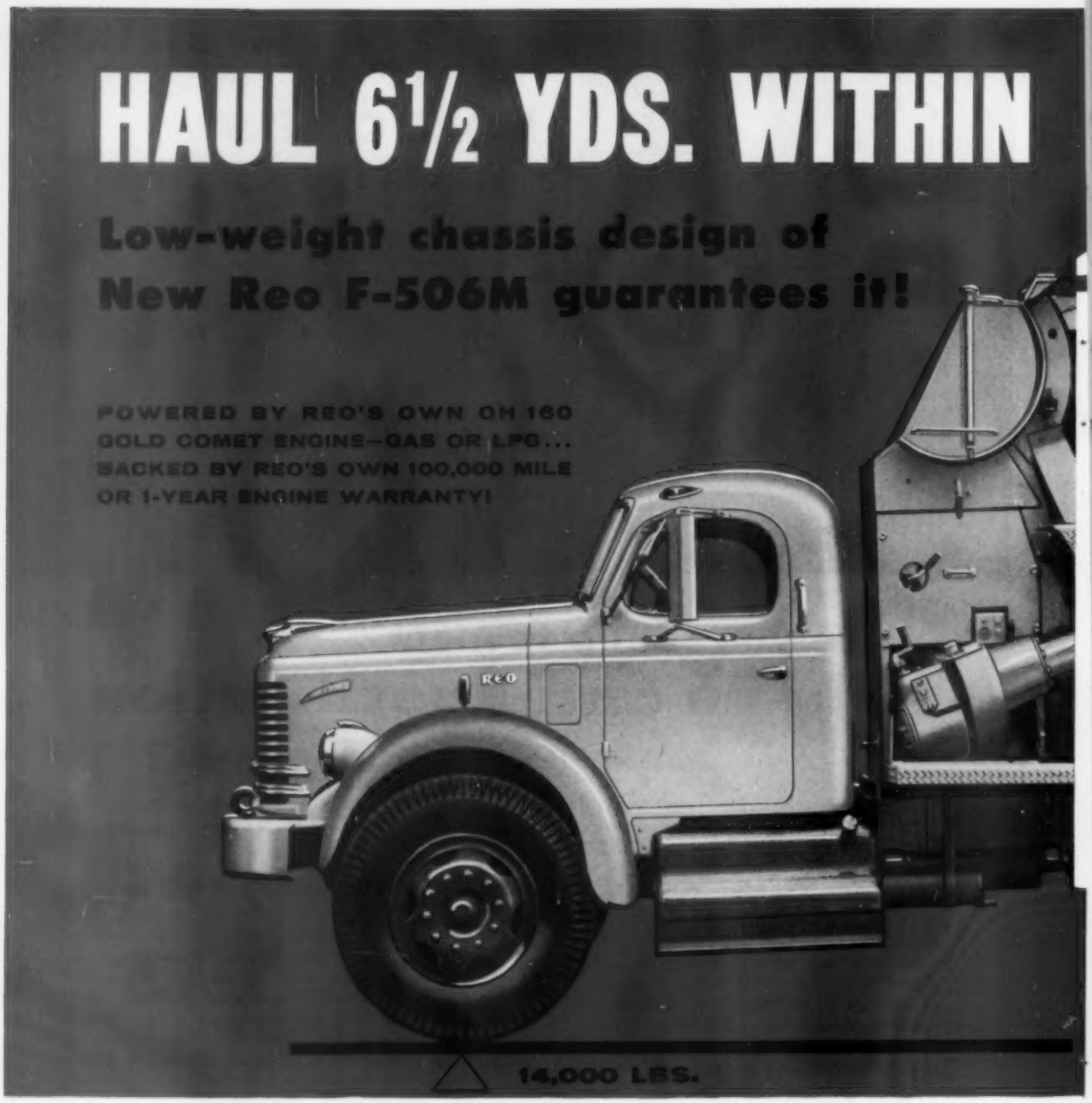
Kiln-Dryers-Coolers

Crushers

HAUL 6½ YDS. WITHIN

Low-weight chassis design of New Reo F-506M guarantees it!

POWERED BY REO'S OWN OH 160 GOLD COMET ENGINE—GAS OR LPG... BACKED BY REO'S OWN 100,000 MILE OR 1-YEAR ENGINE WARRANTY!



The certified chassis weight of Reo's new F-506M is 11,240 lbs. The official weighmaster's receipt proves how it can haul 6½ yds. of concrete and stay well within legal limits. The new Reo F-506M is designed and built specifically for mixer use. Its increased payload is made possible by Reo's new high-strength, low-weight *double-side-rail frame construction*.

The new Reo F-506M actually hauls up to 2 yards more than the average mixer chassis. And it places as much as 6,000 pounds more on the front axle than other conventional mixer trucks.

Reo full power steering, which is standard, makes maneuvering easy in tight places anywhere.

The new F-506M is powered by Reo's own 160 hp short-stroke, wet-sleeve Gold Comet Engine. Plenty of power for both truck and mixer. And, it's backed by Reo's famous *100,000 mile or one year warranty*.

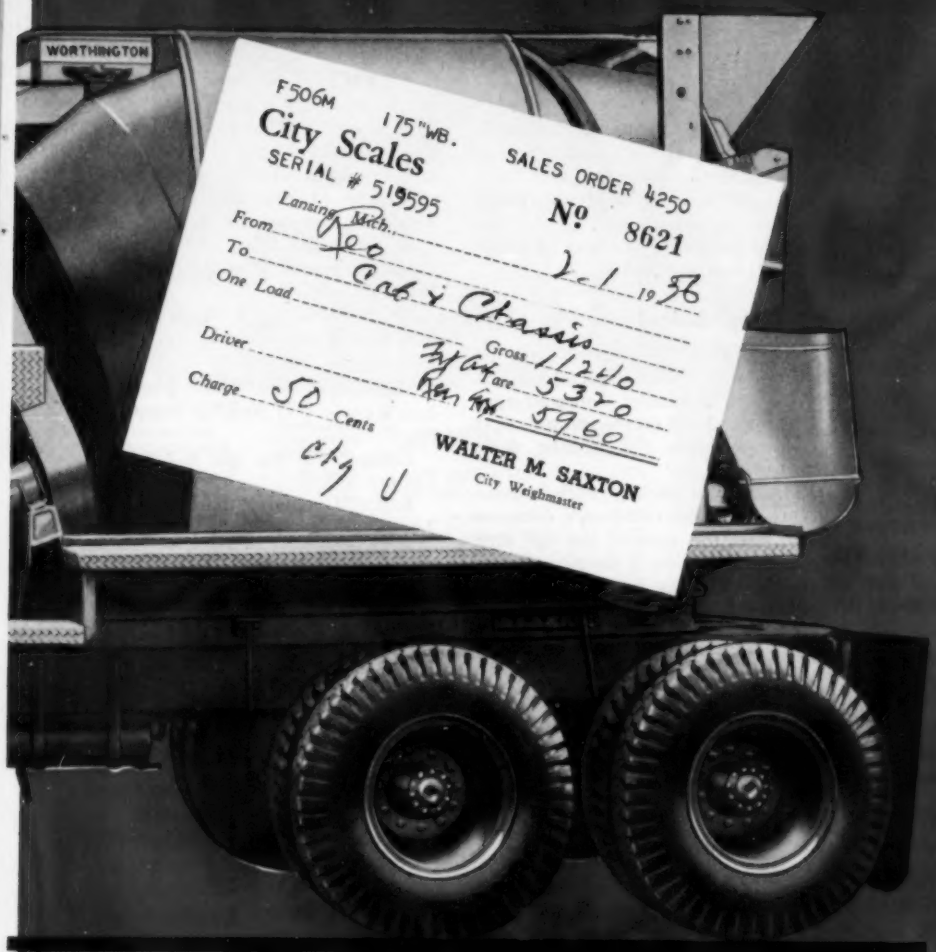
Reo's exclusive *front-axle-payload* design places more weight forward—giving you an extra 2 cubic yards of concrete every trip. With it, you can haul your regular daily volume with fewer trucks and drivers . . . or increase volume without increasing your fleet.

For states that permit greater axle loadings than 32,000 lbs., Reo builds the F-536M—52,000 lbs. G.V.W.

Additional hundreds of pounds can be added to the carrying capacity of the new Reo F-506M with Reo's optional front-end power take-off. The PTO also eliminates extra fuel and maintenance costs of the mixer's auxiliary power unit.

Call your Reo branch or distributor today and get the facts on the Reo that's right for you. Mail the coupon for full information.

32,000 lb. TANDEM LIMIT



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REO MOTORS, INC.
LANSING 20, MICHIGAN
SUBSIDIARY OF BOHN ALUMINUM AND BRASS CORPORATION

Please send at once:

☐ Complete Specifications on F-506M. ☐ Reo Front-End Power Take-off. ☐ New Tandem Catalog.

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COMPANY_____
TITLE_____
ADDRESS_____
CITY_____ COUNTY_____ STATE_____

N.C.S.A.'s Most Successful Convention; Attendance, Exhibits Set New Standard in Chicago

Another ON THE SPOT Report

THE 39th annual convention of the National Crushed Stone Association at the Conrad Hilton Hotel, Chicago, February 20 to 22, 1956, was the most successful in the history of that group. Final attendance figures show that total attendance was 1,751, which considerably exceeded the previous record of 1,522 in 1954. The Manufacturers Division Exposition was by far the largest and most complete in history, with 67 exhibitors. In every other way this convention measured up to past standards. There were the usual outstanding speakers, panels, operating sessions, etc., and the social side was not ignored. The membership also continues to grow; during 1955 there was a net gain of 6 members for a total of 152.

Officers and Directors The new president of the National crushed Stone Association is Norman E. Kelb (Cumberland Quarries, Inc., In-Indianapolis, Ind.). Re-elected were: James Savage (Buffalo Crushed Stone Corp.), treasurer; J. R. Boyd, administrative director; A. T. Goldbeck, engineering director; and J. E. Gray, field engineer. There was one change in the regional vice-presidents, who are: O. E. Benson (Eastern); A. J. Cayia (Northern); H. A. Clark (Midwestern); Houston Clinton (Southwestern); R. G. L. Harstone (British Commonwealth); A. W. McThenia (Central): W. C. Rowe (New England); Nelson Severinghaus (Southeastern); and B. G. Woolpert (Western).

Members of the executive committee are, in addition to Mr. Kelb: T. C. Cooke (Lynn Sand & Stone Co.); W. P. Foss III (New York Trap Rock Corp.); G. D. Lott Jr. (Palmetto Quarries Co.); A. W. McThenia (Acme Limestone Co.); J. V. Owens (Eastern Rock Products, Inc.); Russell Rarey (Marble Cliff Quarries Co.); and W. C. Rowe (Rowe Contracting Co.).

The annual banquet of N.C.S.A. was held on February 22 in the ballroom of the Conrad Hilton Hotel in Chicago.

Meeting of the board of directors of N.C.S.A. Norman E. Kelb is the new president. Re-elected were James Savage (treasurer), J. R. Boyd (administrative director), A. T. Goldbeck (engineering director), and J. E. Gray (field engineer).

New members of the board of directors are: Harold Biehn (Blue Rock, Inc.); Charles Coburn (Waukesha Lime & Stone Co.); Alfred N. Foley (West Roxbury Crushed Stone Co.); and James L. Holden (Geneva Stone Products Corp.); New directors at large are P. V. Corey (Blue Rock Quarry) and James H. Grove Jr. (M. J. Grove Lime Co.).

O. M. Stull (Liberty Limestone Corp.) was elected an honorary director, joining in that capacity H. E. Rodes, Sterling Tomkins, and Harold Williams.

Coming Conventions The 1957 annual convention of N.C.S.A. will be held at Miami Beach, Fla., the week of January 13. Headquarters and meetings will be at the Sans Souci Hotel and accommodations will also be available at the nearby Saxony, Seville, and Sea Isle hotels. The 1958 annual convention and machinery exhibition will be at the Conrad Hilton Hotel, Chicago, the week of February 17-19.

The 1956 midsummer meeting of the N.C.S.A. board of directors will be at the Lake Placid Club, Lake Placid, N. Y., July 12-13. The 1957 board meeting will be at The Homestead, Hot Springs, Va., July 11-12.

Manufacturers Division On February 21 the Manufacturers Division of N.C.S.A. held its annual luncheon, followed by its annual business meeting. The reports of the various committees were presented. Chairman L. A. Eiben (Northern Blower Co.) of the membership committee reported 8 new members in 1955 for a new record total of 111.

The annual luncheon of the Manufacturers Division of N.C.S.A., now headed by Wayne W. King.

The new members are American Hoist & Derrick Co., Boston Woven Hose & Rubber Co., Independent Explosives Co., Thor Power Tool Co., Wickwire Spencer Steel Div., Williams Patent Crusher & Pulverizer Co., Electric Steel Foundry Co., and Canadian Industries Ltd. At the close of the meeting the retiring chairman, B. R. Maloney (E. I. duPont de Nemours & Co.), was presented with a commemorative gavel in recognition of his service.

The new chairman of the division is Wayne W. King (W. S. Tyler Co.). The vice-chairmen are: L. A. Eiben (Northern Blower Co.); H. W. Newton (Barber-Greene Co.); W. A. Rundquist (Pioneer Engineering Works, Inc.). J. R. Boyd was re-elected secretary. Representatives of the Division on the N.C.S.A. board of directors are: Wayne W. King, B. R. Maloney, and R. D. Ketner (General Electric Co.).

Safety Awards The accident-free records of 21 plants in 1954 were accorded well deserved recognition at the N.C.S.A. greeting luncheon on the first day of the convention. A. J. Cayia (Inland Lime and Stone Co.), northern regional vice-president of the association, presided at this luncheon. The N.C.S.A. safety awards were presented by H. H. Kirwn (Eastern Rock Products, Inc.), chairman of the association's accident prevention committee, to the representatives of the 13 companies operating the winning plants.

Winner of the contest was the Warner Company, Philadelphia, Pa., whose Bell Mine (of the Bellefonte Division) attained the remarkable record of 264,689 man-hours without a lost-time accident. This outstanding performance was recognized on a bronze plaque awarded by the *Explosives Engineer Magazine*.

Honorable mention was received by the remaining 20 plants (listed below according to rank in man-hours worked). It is interesting to note that the 223,902 man-hour record of Greystone Granite Quarries, Inc., which in 1955 was record-best, is nearly 20 percent higher than the figure with which it won in 1953.

Greystone Granite Quarries, Inc. (Greystone Quarry), Henderson, N. C.

New Haven Trap Rock Company (North Branford No. 7 Quarry), North Branford, Conn.

Standard Lime & Cement Company (Kimballton Mine), Kimballton, Va.

Superior Stone Company (Red Hill Quarry), Charlottesville, Va.

General Crushed Stone Company (Rock Hill Quarry), Quakertown, Pa.

Superior Stone Company (Woodleaf Quarry), Woodleaf, N. C.

General Crushed Stone Company (Jordanville Quarry), Jordanville, N. Y.

General Crushed Stone Company (Watertown Quarry), Watertown, N. Y.

Warner Company—Bellefonte Division (Union Furnace Quarry), Tyrone, Pa.

Warner Company (Cedar Hollow Quarry), Devault, Pa.

Kentucky Stone Company (Yellow Rock Mine), Yellow Rock, Ky.

Federal Materials Company (Cape Girardeau Quarry), Cape Girardeau, Mo.

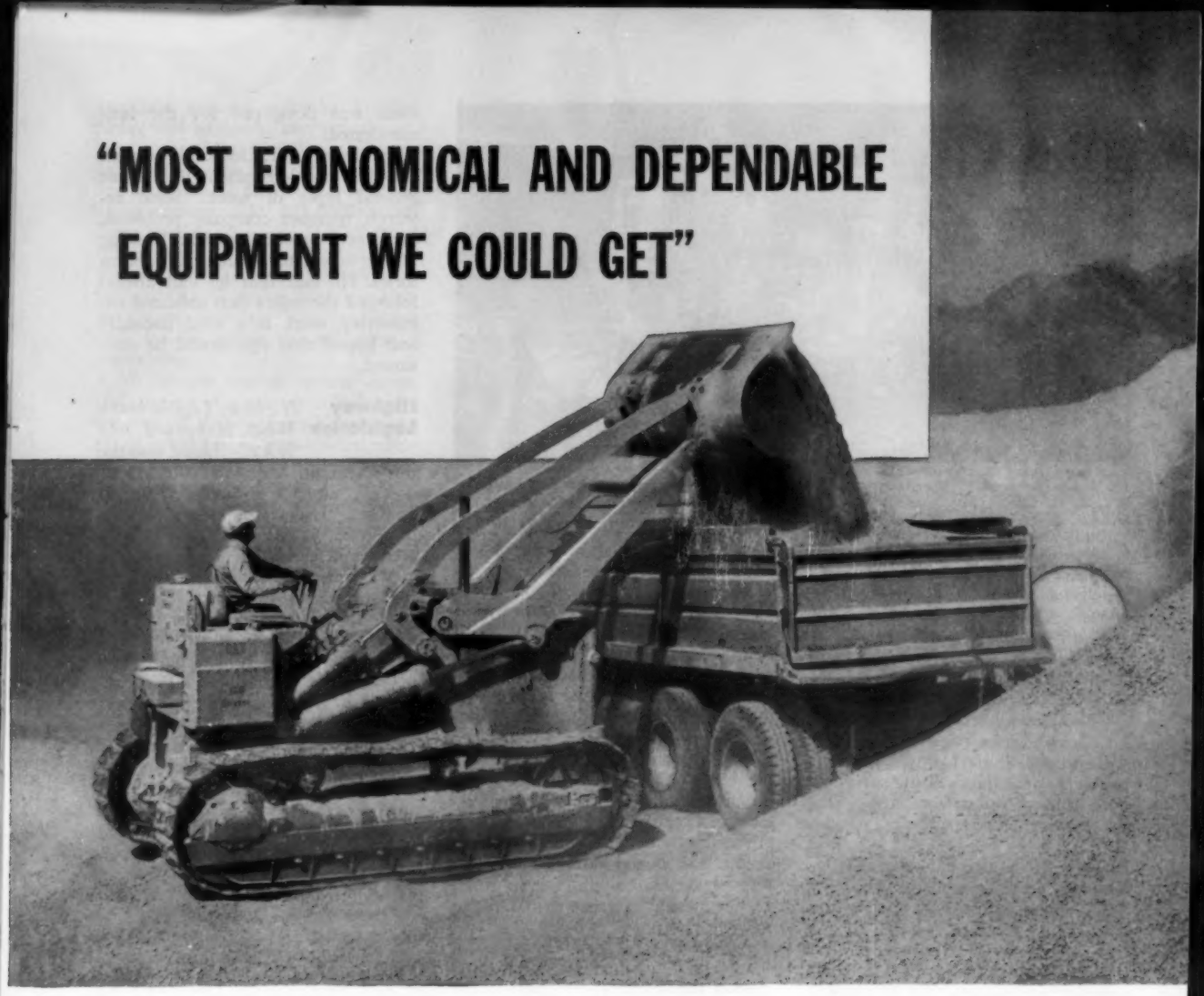
Eastern Rock Products, Inc. (Prospect Stone Plant No. 6), Prospect, N.Y.

Members of the new board of directors of the Manufacturers Division of N.C.S.A. Front row, left to right: G. C. Holton (American Cyanamid Co.), J. R. Boyd (N.C.S.A.), H. W. Newton (Barber-Greene Co.), L. A. Eiben (Northern Blower Co.), Wayne W. King (W. S. Tyler Co.), Mrs. E. S. Gill (Gill Rock Drill Co.), B. R. Maloney (E. I. duPont de Nemours & Co.), and W. A. Rundquist (Pioneer Engineering Works, Inc.).

Second row: W. E. Collins Jr. (Atlas Powder Co.), Frank Briber Jr. (Allis-Chalmers Mfg. Co.), R. S. Wells (Stephens-Adamson Mfg. Co.), F. A. Pampel (Chain Belt Co.), H. R. Herrington (Goodyear Tire & Rubber Co.), George D. Fraunfelder (Easton Car & Construction Co.), E. T. Eggers (American Steel & Wire Div.).

Third row: J. W. Hardesty (Baldwin-Lima-Hamilton Corp.), C. S. Weber (Thew Shovel Co.), C. D. Smith (Joy Manufacturing Co.), H. M. Albers (Kensington Steel Co.), J. M. Hume (Pettibone Mulliken Corp.), and G. H. Keppel (Birdsboro-Buchanan Crusher Dept.).

"MOST ECONOMICAL AND DEPENDABLE EQUIPMENT WE COULD GET"



C. D. Stewart, a partner in Wells and Stewart Construction Co. of Las Vegas, Nev., thinks highly of his Caterpillar machines. "For our type of work," he says, "they are the most economical and durable equipment we could get. We find our machines very simple to operate, and we're most happy with them. Our dealer service is excellent, too." In addition to the No. 6 Traxcavator shown here loading gravel at their crushing plant, Wells and Stewart own two track-type and two rubber-tired tractors built by Caterpillar.

Now there is a successor to the No. 6. It is the new Caterpillar No. 977 Traxcavator*, with 100 HP CAT* Diesel Engine and 2¼-yd. bucket. It and the No. 955 (1½ yd., 70 HP) and the No. 933 (1 yd., 50 HP) comprise the new Caterpillar-built Traxcavator line.

These three new Traxcavators are designed from the ground up as excavating and loading machines. Weight, horsepower and bucket capacity are perfectly balanced for top efficiency and economy. All three have these advanced Caterpillar features: 40-degree bucket tip-back at ground level for more leverage, less spillage. High reach without strain, thanks to extra-strong box section arms. Long-lasting oil clutch, which seldom needs adjustment and stands up to rough duty in pit or quarry. Conveniently placed controls and "built-in" operator comfort.

There's a Caterpillar-built Traxcavator, with choice of buckets and attachments to increase versatility, that will cut costs on *your* operation. Ask your Caterpillar Dealer for an on-the-job demonstration today.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

The ladies luncheon at the Kungsholm Restaurant. In the foreground are the hostesses: Mrs. T. C. Cooke, Swampscott, Mass.; Mrs. Houston Clinton, Burnet, Tex.; Mrs. M. E. McLean, East St. Louis, Ill.; and Mrs. Russell Rarey, Columbus, Ohio.

Kentucky Stone Company (Tyrone Mine), Lawrenceburg, Ky.

Jefferson County Stone Company (Avoca Quarry), Avoca, Ky.

Southwest Stone Company (Plant No. 4 Quarry), Knippa, Tex.

Superior Rock Products Company (Randville Quarry), Sagola, Mich.

Columbia Quarry Company (No. 7 Quarry), Elsberry, Mo.

Kentucky Stone Company (High Bridge Mine), High Bridge, Ky.

Kentucky Stone Company (Elkton Quarry), Elkton, Ky.

Boyd's Report In his annual report, J. R. Boyd, administrative director of N.C.S.A., told of the work being done on railway freight rate increases. The association, he stated, helped to keep the recent 15 percent increase down to 12 percent for crushed stone. Now he said, *Ex parte* 196 asks for another 7 percent increase, and the association has filed a brief opposing it. This increase is also expected to go through, but it is hoped that crushed stone will be at least partially excepted. The ICC, said Mr. Boyd, is driving business to the truckers.

Goldbeck's Report A. T. Goldbeck, engineering director of N.C.S.A. for over 30 years, opened his annual report with the statement that this would be his last convention in that capacity due to his retirement, which will be effective later in the year. He will, however, continue to serve as engineering consultant. As was fitting under these conditions, he reviewed some of the developments over the years and the part his department played in them. In the 20's, he recalled, arbitrary specifications—1:2:4, etc.—were used for concrete regardless of the size and gradation of the stone, the moisture content of the sand, etc. A bulletin was issued on this matter. Another problem was the water/cement ratio brought out by the Portland Cement Association, which handicapped crushed stone as it required more cement than did gravel concrete of the same strength. Bulletin No. 7 was issued on this subject.

Mr. Goldbeck told of the development of the beam test to show the importance of flexural strength. Bulletin 11 described a method for proportioning concrete which took into account all of the variables; the last revision of this bulletin was in 1953, and it is still in great demand. He also reviewed many other problems which arose during the years, and told of their solutions. These had to do with highways, flexible pavements, subgrades, bases, water-proofing shoulders, stepped construction, airport runways, etc. In connection with bituminous concrete, investigations covered proportioning, stripping, stability, durability, fillers, etc. Aggregate studies included sodium and magnesium sulphate tests, ballast, stone sand, particle shape, and (recently) slipperiness; test equipment was developed for the last-mentioned.

In closing, Mr. Goldbeck pointed out that his department does three general types of work: basic research, member company problems, and development research. Routine testing is left to commercial laboratories. He said that he had always followed the policy that unbiased engineering work is a vital necessity and hoped that this would be continued.

Highway Legislation *Highway Legislation—What Happened and What's Ahead* was the subject of an address by Arthur C. Butler, director of the National Highway Users Conference, Washington, D. C. Mr. Butler will be remembered as having spoken at the New York convention in 1953 on the subject of *PAR—Project Adequate Roads*. At that time he said that the need was to inform the public on the necessity for more and better roads, and this has been accomplished. It was hoped then that state action would solve the highway problem, but matters have gone beyond that stage.

The plans for an accelerated highway program came before Congress early in 1955, and Mr. Butler stated that the delay in action has cut con-

Report of regional vice-presidents' activities in the past year.

SUMMARY OF REPORTS OF REGIONAL VICE PRESIDENTS
COVERING 1955 AND THE OUTLOOK FOR 1956

	New England	Eastern	Central	Southwestern	Northern	Midwestern	Southwestern	Canada
1. How did volume of crushed stone business during 1955 compare with 1954?	+12.5%	+3%	Up	+3%	+6%	+7%	-21%	Up
2. How did price level during 1955 compare with 1954?	Same	+2%	Up	Down	+3%	+5%	+1.5%	Same
3. What relation did volume of demand bear to capacity during 1955?	80%	83%	87%	84%	90%	80%	87%	90%
4. What percentage (approx.) of crushed stone business in your territory in 1955 went to:								
a. Highway construction	75%	74%	40%	48%	50%	48%	50%	40%
b. Railroad ballast	0%	3%	5%	13%	3%	1%	20%	6%
c. Building construction	16%	14%	11%	33%	5%	20%	2%	17%
d. Chemical and metallurgical uses	-	1%	20%	.04%	60%	4%	20%	30%
e. Agricultural limestone	-	5%	10%	.02%	2%	15%	.02%	.05%
f. Riprap	0%	1%	1%	.04%	1%	1%	.04%	.05%
g. Other uses	3%	2%	2%	5%	1%	2%	.01%	-
5. Do you anticipate much change in this distribution during 1956?	No	No	No	No	No	No	Yes	No
6. What is the prospect for crushed stone business in your territory during 1956?	Excellent	Good	Good	Good	Good	Good	Good	Excellent
a. Will it increase or decrease from 1955	Up	Same	Same	Up	Up	Same	Up	Up
7. Has additional aggregate capacity been developed during 1955?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
a. Nature of additional aggregate capacity developed in your territory during 1955?	New Plants	Plant Modernization	--	New Plants & Modification	New Plants	New Plants	New Plants	Double Shifts

Breakdown by areas:

New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)
Eastern (Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania)
Central (Kentucky, Ohio, Tennessee, West Virginia)
Southeastern (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Virginia)
Northern (Michigan, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wisconsin)
Midwestern (Illinois, Indiana, Iowa, Kansas, Missouri)
Southwestern (Arizona, Arkansas, Louisiana, New Mexico, Oklahoma, Texas)
Canada

struction volume seriously. Further delay will be costly, and prompt action is necessary. The Boggs bill now before Congress, he said, provides for an equitable distribution of taxes. It would provide $22,000,000,000 from existing taxes and $12,000,000,000 from new taxes. The ill-fated Fallon bill has been reintroduced without its objectionable financing provisions and has been criticized only for its vehicle size and weight restrictions.

Mr. Butler was optimistic about the passage of a suitable bill, largely because of the co-operative attitude of all interested groups toward ironing out differences. All are sold on such a program because it will help to keep our economy at its peak and because of the need for it from defense, business, and safety standpoints. Because anything can happen in an election year, however, Mr. Butler urged all to go home and tell all their neighbors and their congressmen to back these bills, so that they will be sure to pass.

TECHNICAL DEVELOPMENTS

Concrete Developments In *New Developments in Concrete* G. Donald Kennedy, president of the Portland Cement Association, advised everyone to take a long, hard look at these developments as they may have an important effect on our economy, some elements of which are slowing down. Prestressing, he declared, is the most important development in concrete construction in recent years. It offers construction economies since it uses members smaller in section, is stronger, more durable, and lighter than ordinary concrete, and makes possible longer spans. As a result, prestressing is making gains.

The lowly concrete block, said Mr. Kennedy, has also gone far. Such variations as split, slump, shadow, and glazed blocks and the use of color are sweeping the building industry. The ready-mixed concrete industry is now in every town; it can reach nearly every farm; and it is still growing. Precast and ready-mix are gaining ground in highway construction.

The thin shell concrete roof is an important new development; and although Europe is far ahead of us, Mr. Kennedy said that we are catching up. There should soon be a basic change in the principles of structural design, he feels. A.S.C.E. has developed a new ultimate strength theory of concrete design which it will adopt and then sell to other specifying bodies. This theory is based on better concrete. In closing, Mr. Kennedy predicted many years of growth and prosperity for the concrete and related industries.

Flexible Pavement Design Several informative points were made by Raymond C. Herner (chief, Airport Division, C.A.A., Indianapolis, Ind.) in his discussion of *Designing Flexible Pavements for Strength—Not Thickness.* Pointing out that in order to build a structure, the loads which will be imposed, the strength of materials to be used, and stresses of these materials, must all be known, he added that most design problems are complex in which empirical formulas and safety multipliers are used in figuring material and design for structures. It was stated that safety can be built in economically if the designer stays current with advances in material testing and knowledge. Features needed in pavement, it was said, include waterproof and skid-proof characteristics, abrasion resistance, and load distributing ability. Strength of materials used and load distribution reportedly affect efficiency in this type of construction.

Mr. Herner commented that design engineers may duck the issue by specifying a thick sub-base of low-quality material in lieu of making an alternative design of thinner sub-base incorporating high-grade materials. Describing the results of about 200 tests on pavement sections, in which static forces were applied through an aircraft wheel and tire, Mr. Herner reported that these have shown a wide difference in qualities of materials, and what these materials will do when placed in pavements. He added that this testing should be carried further in the public interest, and that producers will benefit when their aggregates become competitive in designs for strength instead of thickness.

Agbit Mix Control *Plant Control of Bituminous Concrete Mixes* was the subject of Donald D. Dagler, district engineer,

The poster listing N.C.S.A. safety award winners and the man-hours operated without a lost-time accident.

The group of N.C.S.A. safety award winners includes (seated): V. C. Morgan (Kentucky Stone Co.); E. L. Brantley (Greystone Granite Quarries Inc.); H. C. Burgess and R. C. Williams (Superior Stone Co.); Emil Berry (Jefferson County Stone Co.); G. C. Larkin (Standard Lime & Cement Co.); A. W. Zimmer Jr. (Federal Materials Co.); W. F. Wise (Southwest Stone Co.). Standing: W. M. Smith (Warner Co., Bellefonte Division); George Purnell Jr. (Warner Co.); J. Haney (Eastern Rock Products Inc.); E. Pflasterer (Columbia Quarry Co.); E. Z. Cole (General Crushed Stone Co.); O. C. Dietschler (General Crushed Stone Co.); J. P. Cox (General Crushed Stone Co.); and R. D. Brewer (New Haven Trap Rock Co.).

Asphalt Institute, Harrisburg, Pa., who was formerly head research engineer, Pennsylvania Department of Highways. A similar talk was given by Mr. Dagler at the fifth N.C.S.A. Short Course in 1953.

The necessary ingredients for a good bituminous concrete pavement, said Mr. Dagler, are good design, good plant control, adequate foundation, and placing under controlled methods. Most of the trouble now, he feels, is with the placing, but plant control can also be improved. It is impossible to make both hot and cold mixes satisfactorily in one plant, although some try to do it with cutbacks. Two separate plants are recommended. About 80 percent of production is now hot mix as it is more stable and durable.

Mr. Dagler advised the use of individual tanks for the different types of asphaltic materials used. The penetration of asphalt as it is received will insure against any cutback by contamination in trucks, etc. Temperature is important, and prevention of segregation of aggregates in stockpiles insures uniform gradation. Good design, he said, can eliminate only a part of the disadvantage of defective aggregates. The U.S. Corps of Engineers is contemplating breaking down the aggregates into more fractions to prevent segregation. Most states, he pointed out, require automatic feed to the drier, and with uniform aggregates less adjustment of the feed is necessary. Keeping the bins full helps to prevent segregation.

Dust collection, said Mr. Dagler, actually pays for itself in turns of reduced wear of machinery alone. Collected dust can be fed back into the material if it is done uniformly and not in too great quantities. The temperature of the aggregates is a controlling factor; it should be within 15 deg. F. ± of the temperature of the asphalt.

High and uniform screen efficiency is necessary to obtain an evenly graded product. The best available aggregate should be used, the asphalt merely holds it together. Poor gradation causes excessive voids and, as a result, slipperiness. As the asphalt bucket coats up, he advised, the scale beam should be adjusted. In closing, Mr. Dagler urged that each plant should have a laboratory with a screen, an extractor, etc., and the necessary equipment for designing mixes.

Gray's Report According to Joseph E. Gray, field engineer of N.C.S.A., one of the most important problems confronting the industry is slipperiness of highways. The constant scrubbing action of tire treads, he said, causes pavements eventually to become slippery when wet. Some aggregates are worse than others in this respect, and tests are being made on limestone sands. It was also found that some concretes containing shale are highly skid resistant as the differential rate of wear keeps the surface rough. It has been found that in the case of crushed limestone the addition of silica sand helps, but this is not a complete solution.

The state of Virginia, said Mr. Gray, is taking steps to insure that new roads are skid-resistant, and to reduce the skid characteristics of existing roads. As a start, Virginia laid 10 experimental road sections, but no real result data is yet available. The association, said Mr. Gray, is working on this problem from various angles and can be of help to any producer involved.

Social Activities A. J. Cayia (Inland Lime and Stone Co., Division of Inland Steel) presided at the greeting luncheon on the first day of the convention. The featured speaker was George A. Bowie, businessman and author, who in his talk entitled *Let's Get Personal* presented a number of humorous but nevertheless serious suggestions on how to get along with oneself. A dinner, a floor show, and dancing at the N.C.S.A. Cabaret on Monday evening was attended to capacity and thoroughly enjoyed.

The general luncheon on Wednesday was presided over by Houston Clinton (Houston Clinton & Company), and the guests present were treated to an eye-opening account by Eddy Gilmore, Associated Press Foreign Correspondent, of his experiences in the Soviet sphere of influence while he was chief of AP's Moscow bureau. In a humorous vain Mr. Gilmore made the most of his unusual physical resemblance to the No. 1 Communist, Nikita Krushchev.

A "full house" was in evidence at the closing affair—the annual banquet—at which President T. C. Cooke (Lynn Sand & Stone Company) was the presiding officer. Indicating that *Two plus Two Aren't Always Four,* the featured speaker and humorist, Tom Collins, kept the guests extremely well entertained.

As usual, the ladies attending this convention with their husbands were well provided for. The hostesses, Mrs. F. C. Cooke, Mrs. Houston Clinton, Mrs. M. E. McLean, Mrs. B. R. Maloney, and Mrs. Russell Rarey, provided a wide range of activities and entertainment, including a sightseeing tour and a luncheon at the famous Kungsholm Restaurant.

BLASTING, DRILLING, STORAGE, HAULAGE, CONTROLS

Rock Breakage A slow-motion moving picture (taken at 3,000 frames per second) accompanied by commentary from Wilbur I. Duvall, physicist with the Applied Physics Laboratory of the U. S. Bureau of Mines at College Park, Md., was presented to open Mr. Duvall's discussion of *Rock Breakage by Explosives.* It was stated that the common conception of the action taking place in a blast is that the gases push rock out from the charge hole, and that this would indicate there would be flying rock accompanied by gases. With respect to these gases, the film clearly showed that they don't follow the fly rock but come up and out the hole, with only an occasional passage to the surface through fractures.

In explaining the action taking place in the breaking of the rock, Mr. Duvall described a number of blasting tests. For the crater test, for example, a charge was placed in a 3-ft. hole. Measurements and analysis of the forces exerted in the blast show that the expanding gases create a strain pressure pulse traveling out from the hole in a manner similar to a seismic wave. This wave, measured by strain gauges, rapidly loses intensity, and upon reaching the surface is reflected back toward the hole as a tension pulse.

A question-and-answer period following showed the interest which the discussion had created. A query was made as to why, since the pressure pulse travels in all directions, the rock isn't broken behind the shot. Mr. Duvall replied to the effect that the rock is broken as a result of the tension pulse reflected back from a free surface. Another question concerned correlation between fly rock velocity and fragmentation. The member asked if this indicated that better fragmentation followed higher velocities. An affirmative reply was made, along with the explanatory remark that fly rock velocity is directly due to greater energy in the explosion and consequent higher breaking power.

Primary Drilling A panel discussion on the latest developments in primary drilling was participated in by M. Hankin Jr. (North Jersey Quarry Company), Harry H. Haas (Buffalo Crushed Stone Cor-

poration), and W. Irwin Gill (Gill Rock Drill Company). Mr. Hankin opened the discussion with a description of some of the operating features and costs of the 6-in. down-the-hole Ingersoll Rand drill recently placed in operation by his company. It was stated that a bit life of 1,500 ft. and hammer life of 8,000 ft. ha: been realized. Labor costs was reported as 50 cents per foot—the total drilling cost being $1.38 per foot of hole. Mr. Hankin commented that this total cost is approximately one-third less than had been experienced with a 6⅝-in. churn drill previously used. He added, however, that the cleaning of chips can present some difficulty, and that the rotating head with its governor is a somewhat complex arrangement. Water, it was said, did not create any problem. Concerning the operating personnel, it was emphasized that the drillers should be equally as capable as a shovel runner.

The use of a 4-in. WK 80 Joy 360 percussion drill was described by Mr. Haas. It was stated that the Joy unit, operated by two men, had replaced four wagon drills which required seven men. A drilling speed of one foot in 1¼ minutes has been realized, Mr. Haas said. Drilling costs, including labor, bits, and steel, were reported to be 39 cents per foot of hole. It was further stated that with bit sharpening at about every 100 ft. of drilling, the bit life is averaging 800 ft. Mr. Haas commented that the operation of the unit has been very favorable.

Certain features from the operational analysis of a 9-in.-diameter churn drill operated by the Gill Rock Drill Company in a quarry of the New Haven Trap Rock Company were presented by Mr. Gill. He stated that the material drilled in developing the following data was a hard basalt. It was reported that the drill, a Bucyrus-Erie unit, averaged 22,000 ft. of hole (with a hole gauge of 9¼ in.) annually. The hourly average was stated to be 3 ft. About 14 ft. of hole was made between bit sharpening, and the perton drilling cost was indicated as 9½ cents. An interesting point brought to this writer's attention by Mrs. E. S. Gill, who is the mother of the latter panel speaker, was the statement that Mr. Gill's father addressed this association 30 years ago on a similar subject.

Surge Storage In opening his discussion of the *Methods and Operation of Surge Pile Storage* as developed in his company, Richard Robinson (Massachusetts Broken Stone Company), commented that surge pile storage was formerly considered impractical for northern operations, where severe snow and freezing conditions were seasonally experienced. With a view toward expanding capacity of the operation, Mr. Robinson stated, the possible application of surge pile operation was investigated. It was learned that a Vermont asbestos producer employing surge piles in the flow operated 20 hours per day in temperatures that ranged as low as 20 degrees below zero.

T. C. Cooke (Lynn Sand & Stone Co.), retiring president, and N. E. Kelb (Cumberland Quarries, Inc.), new president of N.C.S.A.

W. B. Shutt (Superior Stone Co., Raleigh, N. C.), and L. B. Laird (Eagle Iron Works), new chairman of the Manufacturers Division.

Arthur C. Butler, director, National Highway Users Conference, who addressed the association on the subject of highway legislation.

A tandem surge pile design was then established by Mr. Robinson's company, that was described as consisting of two coarser material piles above a reclaiming tunnel, and a finer material surge pile to one side. The raw feed from the quarry is conveyed to a scalper above the coarse piles, where the three fractions are separated—the top and middle sizes dropped to the two piles over the tunnel, and the bottom size conveyed laterally to the third storage. A vibrating feeder below each of the first two surge piles transfers the material to the tunnel belt for transfer to the plants.

Some of the advantages of the new system were reported to include a lower transporting cost, the ability to run in wet weather, a uniform feed to the plant, and the separation of the quarrying phase from the plant flow, which allows the latter to operate in the event the quarry is shut down.

In answering several questions from the floor, Mr. Robinson stated that a 36-in. conveyor belt is used for surge pile feed. He stated that the material from the surge pile not over the tunnel is reclaimed with a front end loader, and that there are no special draw points other than at the vibrating feeder location. He also pointed out that most of the outdoor conveying system is covered With respect to the depth to which freezing takes place in the surge piles, it was stated that the top size (5-in.) pile is not affected, while the middle (3-in. minus) size may have a frost penetration of about 1½ ft.

Overloading and Spillage The problems of overloading and spillage in highway hauling were commented up on by John R. Kringel (New York Trap Rock Corporation), who marked the unfavorable public reaction with respect to the latter point, in particular. It was stated that sideboards on trucks are not the answer since these usually result only in having an even larger load placed. An immediate effect in this case, it was said, is the probable violation of highway load limits. The insistence of contract haulers on full loads was also reported as the usual prelude to spillage on the highways—with the result that the general public blames the

John Law and Ray F. Schneider (Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.) and Joseph De Hertogh (De Hertogh Company, Lemont, Ill.).

supplying plant for that objectionable situation. It was suggested that constant supervision of the chute man in loading may be the only remedy.

An emphatic comment from the floor was made to the effect that overloading should never be countenanced. It was stated further that improper loading methods are partly to blame, and that correct load trimming, along with chute operation control, would go a long way toward eliminating these problems.

Centralized Controls In opening his discussion on *How Centralized Controls Can Save Labor, Production Delays, and Maintenance in Crushed Stone Plants,* Alan K. Raney (application engineer, Rock Products Industries, General Electric Company) stated that centralized controls have proved an important function in plants where flexibility of processing is required. It was pointed out that the main control panel is most often installed in the screen house, not only in this but in such similar industries using central controls as coal, iron ore, etc.

Mr. Raney further remarked on the precautions to be observed in setting up a central system in any plant. These included, with respect to safety for personnel, the ability to block out motors during maintenance periods, and the provision for emergency stops. Safety to equipment requires the installation of interlocking controls and a provision for local starting. In pointing out the difference between automatic and permissive control, it was stated that in the former the last item of equipment in the system is started first, and in turn each succeeding piece of equipment starts the one preceding it. With permissive control the central operator pushes the individual control button for each item. It was recommended that since electric controls are vulnerable to dust, starters be installed in a separate closed area from the main panel.

Several queries were made in a question-and-answer period following Mr. Raney's discussion. One of these concerned the feasibility of setting up central control in a smaller plant, *i.e.*, one of 250 t.p.h. capacity. In reply it was said that the situation should be looked at in the light of other use of manpower. Another questioner requested a comparison between the origional costs of local and central control systems. In answer it was noted that this varies from plant to plant and with operating methods. A definite point made, however, was that central control has the benefit of localizing control repair. The possible application of closed circuit TV for control was brought up, to which Mr. Raney replied that this is presently too expensive for small operations; in addition, this type of system would require maintenance by men trained in electronics.

PERCENTAGE DEPLETION, SUBROGATION, HIGHWAY LEGISLATION

Precentage Depletion Describing *Recent Developments in the Field of Percentage Depletion,* John F. Lane (Gall, Lane and Howe), general counsel for the N.C.S.A., noted that the industry has gone through three phases with respect to percentage depletion: legislative, administrative and interpretive, and litigation over differences with the Internal Revenue Service. It was pointed out that this is a complicated issue, posing problems for both the industry's producers and the Revenue Service, and that there are no final answers at this point. Processing operations, mineralogy, and law were all described as playing a part in the situation. Two major issues were identified—classification of the stone for a particular depletion rate, and the cut-off point between what may be considered as allowable and unallowable processes in determining the gross income from 'mining.'

Mr. Lane stated that with respect to classifying the stone under the 1951 Code (the issue is pertinent also under the 1954 law), the Treasury Department insisted on end-use

These executives and supervisors of New York Trap Rock Corp. represented the firm at the 39th annual N.C.S.A. convention. Seated, from left to right: Edward G. Sullivan, superintendent, Haverstraw plant; Melvin C. Dow, chief engineer; John Jorgensen, superintendent, Tomkins Cove plant; Henry Schwellenbach, assistant superintendent, Clinton Point plant; Michael A. Trojan, assistant personnel and labor relations director; George Foster, superintendent, West Nyack plant; and William C. Ferguson, drilling superintendent.

Standing, left to right: Robert Mead, assistant superintendent, Haverstraw plant; John R. Kringel, assistant vice-president, operations; Clarence Stetser, general superintendent; Luther F. Miller, electrical superintendent; Andrew W. Komonchak, personnel and labor relations director; Seymour B. Fleming, safety director; Gerald M. Boyle, vice-president, sales; George W. White, superintendent, Clinton Point plant; Alan R. Winslow, staff assistant, community relations; and Floyd J. Buffington, vice-president, operations.

of the material as determinative of classification. It was noted that the Virginian Limestone Corp. case is still pending on the issue of what is dolomite, and does end-use apply to dolomite as well as to all road stone. The latter would apply to the years 1951-1953 inclusive, since the issue was resolved in 1954 by incorporating end-use in the statute.

With respect to the cut-off point, it was suggested that this is probably the most important issue (and about the same under both acts), since the dollar amount to which the depletion rate can be applied is directly involved. This is due to the fact that the Treasury Department does not allow percentage depletion on income from operating phases other than mining. However, it was noted that there is a lack of uniform application of this test by the Revenue Service, since some agents fail to raise the issue of fine grinding, for example. Stating that the typical stone operator does not have a complex processing situation but only a succession of reductions which are, Mr. Lane said, a continuation of one process, he suggested that producers consider their complete process as ordinary treatment and take depletion on the entire gross income, including bagging. This opinion was reached due to the fact that it is not known where the line will be drawn, because the law doesn't say anything specifically about product sizes, and because of the terminology surrounding "ordinary treatment."

It was pointed out that the Treasury Department would probably not accept those premises, but would allow the courts to resolve the issue. Mr. Lane emphasized that because of individual circumstances, operators should keep abreast of developments in order to protect their positions in the event of favorable litigation.

Subrogation Developments *Significant Developments Regarding Insurance Subrogation Problems* were described by Warren C. Rowe (Rowe Contracting Co.), chairman of the N.C.S.A. Subrogation Committee. He first briefly described subrogation. Many home owners carry extended coverage insurance which protects them from explosion, among other things. When quarry blasts are made, insurance adjusters settle claims without consulting the quarries, and later try to collect from them. This problem at first looked like a simple educational proposition, said Mr. Rowe, but it soon became apparent that great effort was needed both locally and on a national scale.

Mr. Rowe briefly described the many and complicated steps taken by the committee, the National Board of Fire Underwriters, and others to set up some form of standard procedure to control the epidemic of cases in various parts of the country. A big advance was made when the insurance companies agreed to form a commission to set up a pattern as a guide to adjusters and claim agents. Co-operation has also been established between the industry and the insurance companies. Each problem must be worked out at the local level, and every operator should use the best engineering advice in planning shots. Good seismic records are invaluable, especially in court. Mr. Rowe also advised pre-inspection of new houses before any blasting is done. The aim of the committee is to establish standard procedure for vibration claims, and progress is being made.

Nashville Producer Host At Tow Boat Christening

The Cumberland River Sand and Gravel Company, Nashville, Tenn., recently launched its largest tow boat, the 108-ft. *Andrew B,* which is capable of handling barges carrying up to 10,000 tons.

Named for Andrew B. Crichton, a founder of the Johnstown Coal & Coke Company, parent firm of the Cumberland River Sand & Gravel Company, the *Andrew B* was built by the St. Louis Shipbuilding & Steel Company. The special propeller enclosures and extra rudders of the 1,400-hp. craft boost effective horsepower to 1,800.

An open house preceded the christening ceremonies, and spectators were allowed to tour the modern quarters, engine room, corridors, pilot house, and modern kitchen.

The captain of the *Andrew B* is Paul Ross of Nashville, well-known Cumberland river pilot.

California Portland Cement Opens Plant in Mojave

Mojave, Calif., is the location of the California Portland Cement Company's new plant, which recently went into production. This is the company's third plant and its second in southern California.

Although production is still on a limited scale, ultimate capacity of the new facility is 5,000 bbl. per day. The parent plant of the California Portland Cement Co. is at Colton. This installation has an annual capacity of 5,000,000 bbl.

Puerto Rico Mineral Output Valued at $14,000,000— Setting New High Record

A preliminary report has been prepared under a co-operative agreement for the collection of mineral statistics between the U. S. Bureau of Mines and the Division of Mineralogy and Geology, Commonwealth of Puerto Rico, Dr. Mort D. Turner, chief geologist.

The total 1955 value of mineral production in Puerto Rico established a new record of $14,000,000, almost 7 percent greater than that of the previous 1954 record of $13,500,000, according to the Bartlesville, Okla., office of the U. S. Bureau of Mines. Six minerals were produced in Puerto Rico in 1955, the same number as in 1954, and all were of the nonmetallic group.

Cement production was reported from Ponce and San Juan districts. Output and value were both greater in 1955 than in 1954 as industrial and highway construction continued active.

Output of clay in Puerto Rico increased in 1955 as demand for heavy clay products and portland cement remained at high levels. Ponce and San Juan districts accounted for the clay produced.

Lime was produced in Mayaguez and Humacao districts in 1955. Output was greater in 1955 than 1954.

Salt was reported from Mayaguez district by four producers operating six plants. Output and value were slightly greater in 1955 than in 1954.

Sand and gravel production in 1955 established new records, with an estimated 450,000 tons valued at $1,000,000. Construction projects and glass plants consumed most of the material. Production was reported from seven districts.

The output and value of stone in Puerto Rico continued the rise begun in 1954 as demand for crushed and dimension products maintained high levels. Output in 1955 was estimated at 929,000 tons, valued at $1,800,000.

MILTON BROWN has been appointed sales representative by the United States Gypsum Company. Mr. Brown will take over the Santa Fe territory, replacing O. H. BOHANNAN. The latter has been transferred to Roswell, N. M., to open a new territory for the firm.

RALPH RICHIE, Dixon, Ill., has been appointed to a public relations post with the Medusa Portland Cement Company, Cleveland, O.

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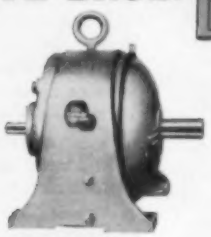

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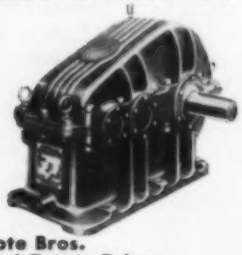

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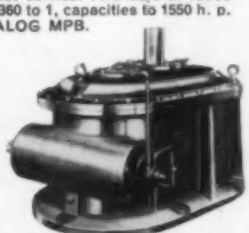
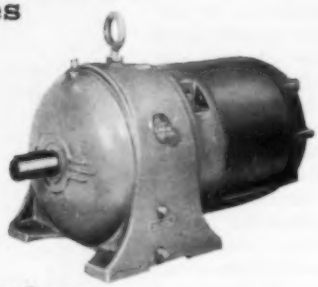


Foote Bros. Worm-Helical Gear Drives

Designed for heavy-duty stirring, mixing or agitating applications, Foote Bros. Worm-Helical Drives are available with horizontal input shaft, vertical up or down or both output shaft. Ratios range to 285 to 1, capacity to 128 h. p. CATALOG WHB.



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Eriez, famous for permanent-powered magnetic equipment for industry, introduces a revolutionary line of Electro-PERMANENT Magnetic Unit (Bin) Vibrators and Feeders. Operating at 3600 CPM directly off an AC line, all you do to these powerful, compact units is plug them in . . . and they go to work! THERE'S NO RECTIFIER NEEDED!

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LOWER MAINTENANCE and OPERATING COSTS . . . LONGER, TROUBLE-FREE SERVICE . . . VERSATILE UNITS PROVIDE BROADER OPERATING RANGES WITH LESS POWER CONSUMPTION . . . HI-VI UNITS ARE COMPACT, LIGHTWEIGHT, EASILY INSTALLED, NEED NO REALIGNING . . . NO SLIDING OR ROTATING PARTS TO WEAR . . . No lubricants needed . . . Noise factor is reduced, working conditions improved . . . New type "double action" drive provides higher operating efficiency with low operating cost . . . Many HI-VI models are totally enclosed, weather-and dust-resistant.

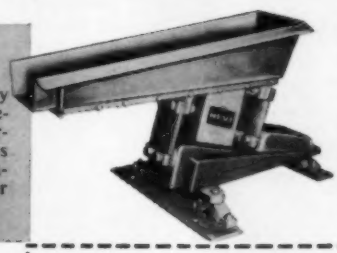
Pat. Pending

HI-VI Unit (bin) Vibrators . . . keep materials flowing freely

Units AUTOMATICALLY SELF-ADJUST to meet any load requirements. They eliminate pile-ups, sticking, bridging and arching of bulk materials flowing out of or through containers. Materials are kept flowing in a smooth, steady stream through hoppers, bins, chutes, etc., by the exclusive double diaphragming (kneading) action of the HI-VI unit.

HI-VI's operating principle

The heart of the HI-VI units is a permanently powered Alnico V magnetic element. This replaces, in effect, rectifiers by providing an inherent magnetic rectification system which provides more operating forces, no lost efficiency. All energy (two-way push-pull vibrating action) goes for productive performance.



HI-VI Vibratory Feeders . . . for accurate, controlled feed

Bulk materials are conveyed, spread, agitated, separated, blended, dried and mixed —automatically—by the vibratory action of the HI-VI Feeder. Unit requires little space, and operates at any desired speed, variable from ounces to tons per hour. For all types of materials: hot, dry, damp, dusty, lumpy, abrasive, etc.

ERIEZ HI-POWR MAGNETIC SEPARATORS

ERIEZ HI-VI VIBRATORY EQUIPMENT

HI-VI is the newest product of the Eriez Manufacturing Company, pioneer producer of permanent-powered magnetic Separators for Industry. Eriez HI-POWR Magnets are used to purify, retrieve and separate in processing lines of all types, and are available in a wide range of styles and sizes.

ERIEZ MANUFACTURING COMPANY
113D MAGNET DR., ERIE, PA.

Please send information on the new HI-VI vibratory equipment to:

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Allentown Portland
Adds New Production Units

Another ON THE SPOT Report

THE present record wave of expansion in the cement industry affecting as it does nearly every existing plant, will prove an excellent opportunity to compare various types of operation, both in new plants and in plant expansions.

By WALTER E. TRAUFFER

The recent additions to the West Conshohocken, Pa., plant of the Allentown Portland Cement Company, for example, were made at an installation which was basically unchanged since it was built 28 years ago.

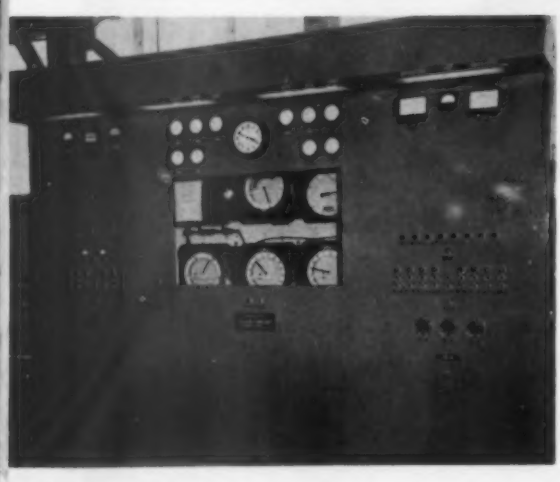
Built in 1927, this plant was German (Polysius) designed and equipped and was considered to be one of the most efficient wet-process operations in this country at that time. A complete description was published in the September 25, 1929, issue of PIT AND QUARRY.

This plant is also notable as the birthplace of the Separation Process Company (Breerwood) system of flotation which was developed to remove undesirable materials from the raw stone feed when the quality of the stone available began to fall off. This system first went into operation in 1933 and was completely described in these pages in the July, 1941, issue. Since then a number of other installations have been made in plants in this country and in other parts of the world where it would not otherwise have been possible to produce cement.

The present expansion program was begun with the installation in August, 1954, of a new finish-grinding mill. The new kiln went into operation in February, 1955, and a new raw-grinding mill has just been installed to put the entire operation back into balance. Through the years numerous minor improvements had been made to the plant which increased its efficiency and capacity. The two original 11-ft. 7-in. and 8-ft. 9-in. by 223-ft. Polysius kilns were rated at 1,100 bbl. daily when they were installed. They are now producing 1,900 bbl. each. In comparison, the new 10-ft. 6-in. by 340-ft. Traylor kiln is producing 2,600 bbl. daily.

The storage building is being enlarged to hold the stone as well as clinker and gypsum. A new 4-cu. yd. Milwaukee overhead crane is also

The new 10½- by 340-ft. kiln at Allentown, with its dust collectors and new steel stack (background).



Below, left: The control board for the new kiln, with the pressurized enclosure for the major instruments.

A closeup of the kiln drive, showing the constant-speed motor and adjustable speed coupling. The auxiliary gasoline engine is at the left.

being installed to supplement the original 3-cu. yd. crane.

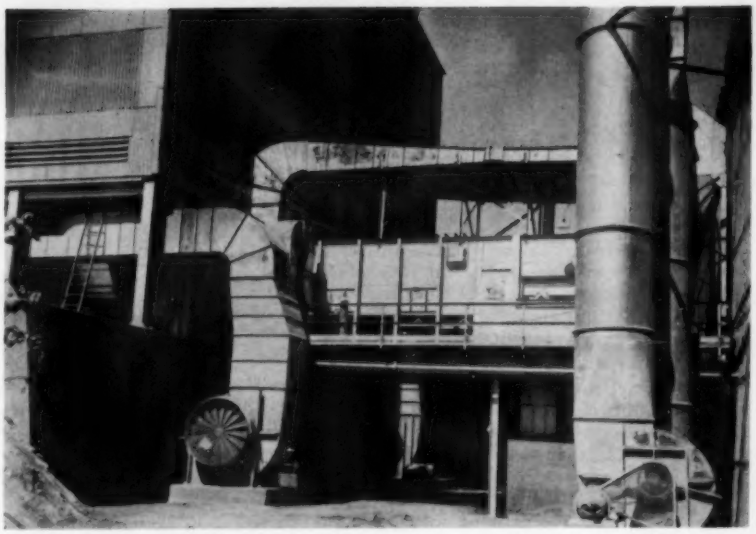
In addition to the new raw mill being installed, the kiln slurry storage has been augmented by using for this purpose the 125-ft. dia. Dorr thickener which was a part of the flotation process.

The slurry from the two original 7-ft. 3-in. by 42-ft. 8-in. Polysius mills has a moisture content of 33½ to 34½ percent. This is pumped to a slurry tank and then to the ferris-wheel feeders of the three kilns, all of which are located on the feed floor above the two original kilns. This location for the new kiln feeder was preferred as the overflow from all three can be returned by gravity to the slurry feed tank. This would not have been possible, due to lack of elevation, if the No. 3 feeder had been placed at the feed end of that kiln about 150 ft. away. As it is, the No. 3 feeder can supply the new kiln by gravity.

The new raw mill is a 7- by 30-ft Traylor 2-compartment mill in closed circuit with a Tyler Hum-mer screen. Spitzers from the screen will be pumped back to the mill. The mill is driven at the rate of 17.5 r.p.m. by a 600-hp., 2300-v., 180-r.p.m. Electric Machinery synchronous motor.

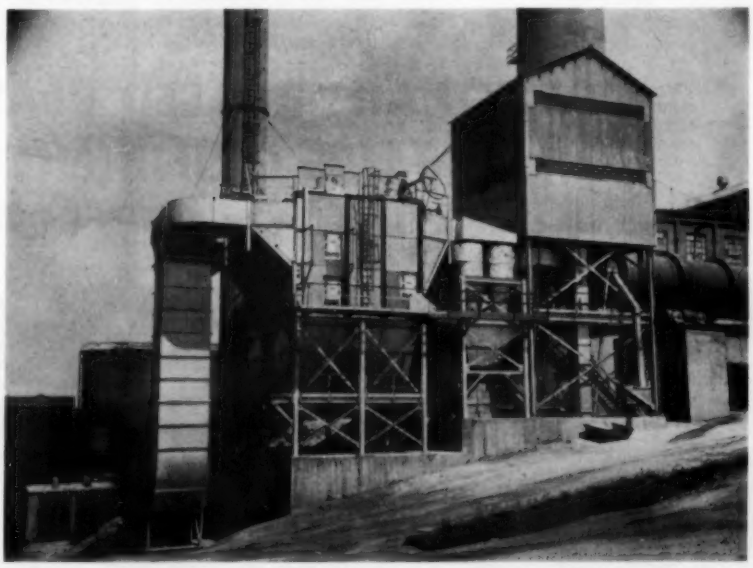
The new 10-ft. 6-in. by 340-ft. Traylor kiln is all-welded, has five trunnions with stiffener rings, seals at both ends, and an air-cooled nose ring. It has a slope of 7/16 in. per ft. and is driven at the rate of 84 r.p.m. The lining in the burning zone consists of 45 ft. of Canadian Refractories Magnecon. General Refractories Hiac Brick and insulating brick are used in that order from the firing end. There is a 59-ft. section of Traylor heat-exchanging chain at the feed end.

The new kiln and its ferris-wheel feeder have Electric Machinery Co. Dynamatic completely automatic electronic control. The kiln is driven by a 100-hp., 1200-r.p.m. constant-speed motor direct coupled to a WCS-216 Dynamatic adjustable-speed drive. The kiln speed is manually controlled through a rheostat on the kiln control board, but provision is also made for controlling the speed of the kiln and feeder automatically. A generator on the Dynamic kiln drive sends an impulse to the slurry feeder motor which is a 5-hp. Dynamatic unit. The kiln speed range is up to 84 r.p.h. but it is now being run steadily at top speed. An International Harvester U264 gasoline engine is available as auxiliary drive for the kiln in any emergency requiring its use.



The new 55-ft., 3-compartment traveling-grate cooler, with the fan and air ducts (left).

The feed end of the kiln, with a pair of mechanical dust collectors, followed by a 2-compartment electrical precipitator (left).



The new kiln is oil-fired as the company preferred not to enlarge the coal mill department at this time. Equipment for coal firing will be installed at a later date. Fuel is Bunker C No. 6 oil, which is rated at 140,000 B.t.u's per gal. A National Air Oil burner is used with high-pressure (450-lb.) atomization. A temperature of 2,800 deg. F. is maintained in the burning zone, resulting in about 600 deg. at the feed end and 400 to 440 deg. at the fan. At present the new kiln burns about 1,100,000 B.t.u.'s per bbl. of clinker produced, but this is expected to be reduced to about 1,000,000 B.t.u.'s when the entire operation is in balance. The two old kilns burn 1,320,000 B.t.u.'s per bbl.

In operating this kiln everything else, including the kiln speed and slurry feed, is varied as required, but the O_2 content is kept constant. The back-end kiln draft is regulated manually; the setting varies, but the aim is the minimum of excess air. The cooler also has a manual speed control, and a vent fan takes excess air from it automatically to keep a constant static pressure in the cooler. The burner can adjust the automatic controls to hold the desired pressure.

Lined with Lorain . . . for millions of tons at Universal Atlas' Northampton Plant

In 1943, when Universal Atlas opened its modern Northampton, Pa., plant, thirteen of the grinding mills were lined with USS Lorain rolled steel plate mill liners, and three of these mills still have the original liners. At Northampton experience has shown that no cast liner can withstand the tumbling of heavy media—4-inch grinding balls are used in wet primary grinding of raw material and in the primary clinker mills—like this tough, rolled and hardened steel lining.

In one of Northampton's 9′ 6″ primary, wet raw mills, a Lorain lining ground 1,932,548 tons of rock. A second Lorain lining in this mill ground out 1,858,595 tons. The present lining, installed last year, is a new type—a Lorain lining designed for the heaviest duty. Careful measurements of the wear so far and the plant's experience with this particular type liner in other mills indicate a conservative 2¼ million ton life and a lining cost, including labor, of only $2.71 per thousand tons ground.

USS Lorain linings give bonus-life service because they are made of tough, rolled steel—uniformly hot-worked and free of blow-holes or inclusions that are a frequent cause of breakage in castings. The lift bars are of heat treated alloy steel, hardened to resist abrasion and impact and to provide efficient lift even when the plates are worn to paper thinness. Every Lorain lining is designed to fit its mill precisely with a maximum of contact between lining and shell for good support. No backing or zincing is required.

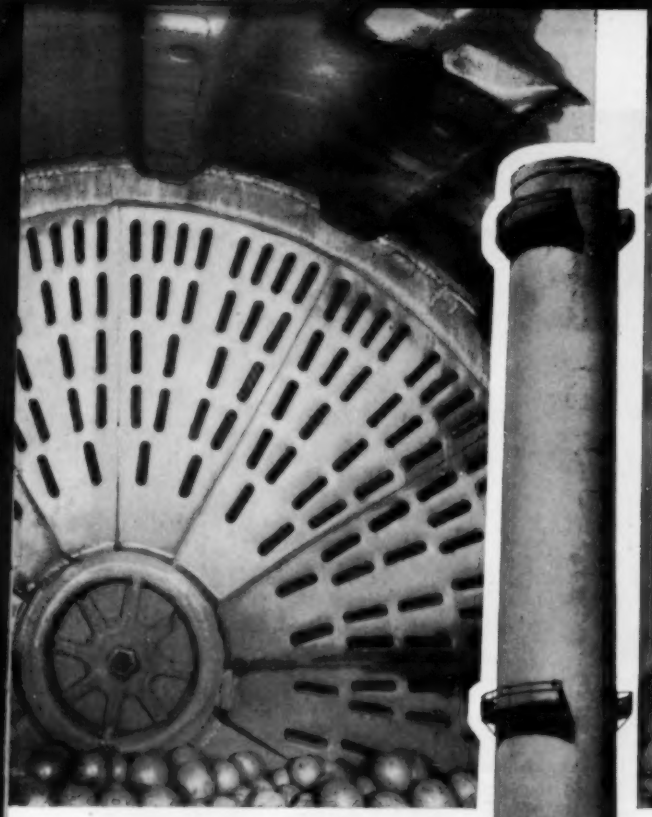
If you are in need of expert technical assistance on any grinding problem, write: Specialty Products Sales, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS LORAIN ROLLED PLATE LININGS *and* USS GRINDING BALLS

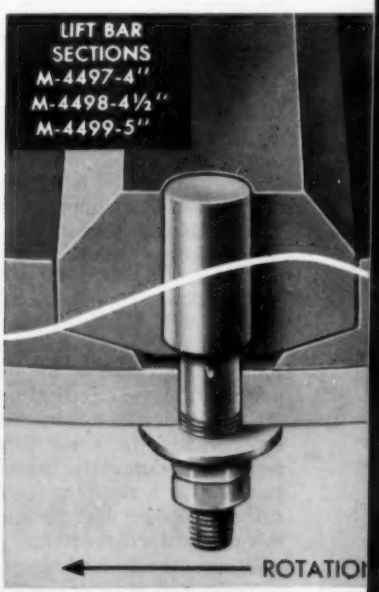
AN OVERALL VIEW of Universal Atlas Cement Company's Northampton plant. Here, Lorain Rolled Plate Linings are used for all phases of grinding.

UNITED STATES



INTERIOR VIEW FACING DISCHARGE END of a 9′ 6″ secondary ball mill (wet process) at Universal Atlas' Northampton, Pa., plant. At time picture was taken this Lorain liner had ground 496,815 tons.

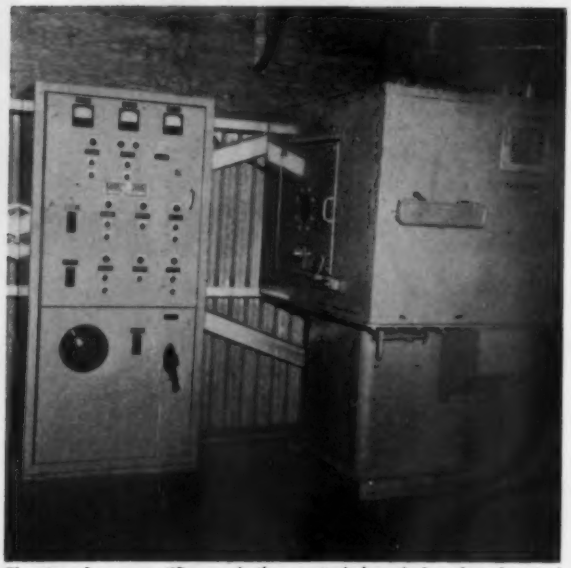
THIS IS AN INTERIOR VIEW OF THE FEED END of one of the grey clinker primary mills. 4-inch Lorain Grinding balls are used as make-up throughout. This lining has ground 1,836,688 barrels of clinker to date. As can be seen from the condition of the lining, wear is estimated to be under 20 per cent; several million more barrels will be ground before replacement is necessary.



THIS CROSS-SECTION drawing shows the heavy-duty type USS Lorain Lining used in primary grinding. This type lining has ground millions of tons of grey rock at Northampton at a liner cost—including labor—of $2.71 per thousand tons. White line on drawing indicates maximum wear profile.

S T E E L

The cooler discharges clinker to the hammermill and a vibrating conveyor carries it to storage.



The transformer-rectifier and the control board for the electrical precipitator in the room above it.

All controls and instruments are on a Fuller kiln control board, and all the usual items are present except an optical pyrometer. In addition to the above-mentioned items the instruments include the following: recording pyrometers for the stack, feed end, and back of chains; a Bailey oxygen analyzer; CO_2 and excess air indicators, etc. Leeds-Northrup and Bailey instruments are used. The feed-end draft is shown not only on the main board but also on the pug mill feeder floor.

The 600 deg. exhaust gas from the kiln is discharged into a settling chamber and then to a pair of Buell Van Tongeren mechanical dust collectors followed by a 2-compartment Buell electrical precipitator. A fan exhausts from these collectors to the 8- by 150-ft. McDermott wheel stack. The combined all-over dust collecting efficiency is 98 percent by total weight of dust.

Individual screw conveyors feed the collected dust from the settling chamber, each of the two mechanical collectors and each of the two compartments of the electrical precipitator to a screw conveyor, the bucket elevator, and the screw conveyor in series. The dust is discharged into a pug mill at a steady predetermined rate and blended with the slurry. The mixture is discharged from the pug mill into the kiln feed pipe.

Excess dust is discharged from the elevator to a surge bin and is fed back to the boot of the elevator when needed.

The New York Blower Company kiln draft fan is a heavy-duty industry-type unit designed for handling air up to 800 deg. F. It is a constant-speed type, with an intake damper for controlling the volume of air. Drive is through V-belt by an Electric Machinery Company 150-hp., 2,300-v., 875-r.p.m. slip-ring motor with a capacitor.

Clinker is discharged from the kiln at a temperature of about 2,600 deg. F. into the 55-ft. Fuller Narsted cooler. This has three separate air compartments through which the clinker is moved by a drag chain which is moved forward in 16-in. strokes by a hydraulic ram. A clinker leveling device keeps the bed an even depth. The special-shaped grate bars are of heat-resisting steel. Air for the cooler is supplied by a 60-hp. New York Blower constant-speed fan with damper control. Hot air from the cooler bed goes to the kiln as secondary air. Dust is removed *en route* by a Buell mechanical collector.

The clinker is discharged from the cooler at a temperature of 90 to 120 deg. F., depending on the size of the pieces. A Fuller clinker breaker reduces the clinker and discharges it onto a 16-ft. Carrier natural frequency vibrating conveyor, which discharges it direct to the covered storage building.

Clinker is fed from storage to the three finish-grinding mills, including the two original Polysius units. The new 10- by 15½-ft. F. L. Smidth single-compartment ball mill is fed by a battery of three Schaeffer Poidometers—one for clinker, one for gypsum, and the third for limestone when mortar cement is being made. The ball mill operates in closed circuit with a 16-ft. Sturtevant separator. A Norblo bag-type collector takes the dust from the separator exhaust. The mill is driven by an 800-hp., 2,300-v., 180-r.p.m. Allis-Chalmers synchronous motor.

Simplot Expects Big Yield Of Phosphate Rock in 1956

Officials of the J. R. Simplot Company, Boise, Idaho, state that 150,000 tons of acid grade phosphate rock will be mined from the firm's Centennial Mountains operation during 1956.

Early operations will be from open-pit reserves, from which the phosphate rock will be hauled by truck to a crushing plant north of Lakeview, Mont. After crushing, the ore will be hauled 35 miles to Monida, Mont., and shipped to Northwest Nitro Chemicals, Ltd., in Canada for processing into fertilizers.

Atlas Powder Co. Bulletin Offers Advice on Explosives

A four-page bulletin entitled *Prevention of Accidents in the Use of Explosives* has been issued by the Atlas Powder Company for free distribution to all segments of the industry employing blasting in their operations.

The bulletin contains a revised list of instructions and warnings and also suggestions for the proper handling and use of explosives. Atlas spokesmen went on record as being "extremely interested" in offering every possible assistance to explosives users and in giving wide circulation to this most necessary information.

R/M *Poly-V® Drive*
Delivers More Power in Less Space!

No other belt drive can deliver as much power in the same space. It's R/M's patented Poly-V* Drive developed by R/M engineers after years of research. This totally new concept in power transmission delivers up to 50% more power than a conventional V-belt drive of equal width.

Unique design accounts for the unusual power capacity of R/M Poly-V Drive. A *single, endless* belt with parallel V-ribs runs on sheaves specially designed to mate precisely with the belt ribs. The uniform pull of this single unit belt distributes drive load evenly over the full width of the sheave . . . gives higher horsepower capacity per inch of drive width than ever before possible.

There are many advantages in this space saving drive . . . Poly-V has eliminated the matching problems of multiple V-belt drives, greatly increased the life expectancy of belts and sheaves and maintains more constant speed ratios under all loads. Just *two* cross sections of Poly-V meet every heavy duty power requirement . . . costly belt and sheave inventories are kept to a new low! R/M Poly-V Belts have strength members of superior synthetic cords, are oil-proof, non-spark and heat resistant.

Let an R/M representative demonstrate how you can improve your power transmission applications . . . get "More Use per Dollar" . . . with R/M Poly-V Drive. Contact R/M . . . or write for Poly-V* Drive Bulletin #6638.

CONDOR V-BELTS • R/M SUPER-POWER V-BELTS

Write for Bulletin #6868 on the complete line of Condor V-Belts for regular service on conventional V-belt drives. Also write for Bulletin #6628 on R/M Super-Power V-Belts with 40% more Horsepower capacity where needed.

*Poly-V is a registered Raybestos-Manhattan Trademark

RM 609

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Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Laundry Pads and Covers • Bowling Balls

The Boys At San Leandro Dry Up A Quarry Lake

CALAVERAS Cement Company quarry crews labored gallantly after the recent California rainstorms and floods, draining an estimated 400,000,000 gallons of water from the company's main quarry without any loss of production.

Water began rushing into the quarry near San Andreas, Calif., on the night of December 23, 1955, when Old Gulch Creek nearby went over its banks. For nearly a week the flow continued at the unprecedented rate of 200,000 g.p.m. until a diversion channel could be dug. Fortunately, the possibility of flooding had been anticipated and all quarry equipment had been removed before the water poured in.

The diversion channel, about a half-mile long, 15 ft. wide and 10 ft. deep, was finished on December 29. Quarry crews worked day and night, much of the time in driving rains, using bulldozers, shovels, and explosives to throw up 2,000 ft. of levee and 500 ft. of canal.

Meanwhile, company officials were scouring northern California for all available pumping equipment. Eighteen units were rounded up, some of them even borrowed from tugboats in San Francisco Bay. By January 23, 1956, the last of the water had been pumped out, and quarry operations were back to normal.

The flood, which had made the quarry look like a resort lake, did not affect operations at the Cement plant nearby. Adequate supplies of stone were in stockpile to keep the kilns supplied. Although an extra shovel had been dispatched to work another quarry which was unaffected by the high waters, in anticipation of a possible long drying-out period on the main quarry floor, the latter proved ready for operations immediately after the bottom waters had been drained off.

(*Continued on page* 126)

This is how the Calaveras Cement Company quarry looked on December 29, after rampaging Old Gulch Creek broke its banks during the recent California storms. Water poured in at the rate of 200,000 g.p.m. Results: 400,000,000 gal. had to be pumped out. Fortunately, all equipment had been removed from the quarry in anticipation of a possible flood.

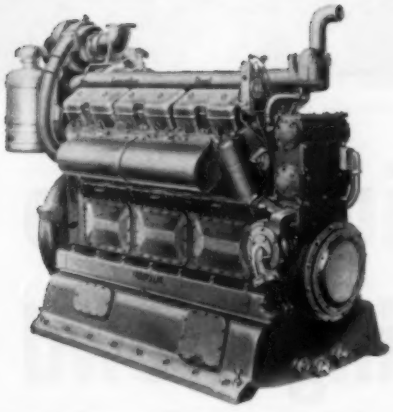
E. M. Barker (right), Calaveras vice-president, inspects the pumping operation with Grant Metzger (in white helmet, left), plant manager. Five of the 18 pumps used for draining the quarry are shown in the foreground. Another battery of pumps is in the background.

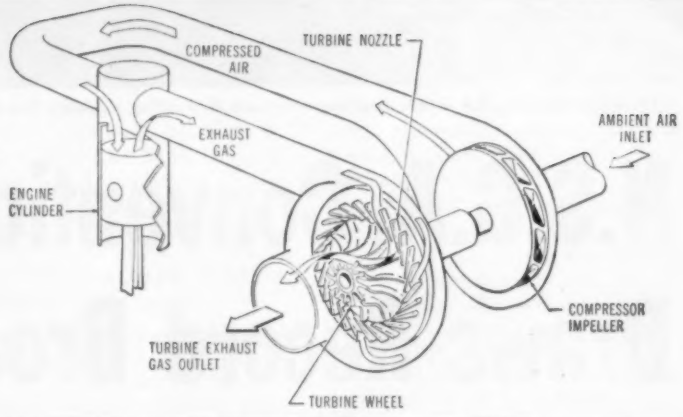
Right: On January 23 quarry operations were back to normal. Not a day of productive work had been lost by the Calaveras plant. Meanwhile, the company's $4,000,000 plant expansion program was speeded up. In the quarry, limestone, shale, and overburden had been worked steadily on high and accessible ground. Only the muddy tracks in the foreground show signs that the weather had even been wet.

Caterpillar announces a TURBOCHARGED

D397 (SERIES D) 650 HP Maximum @ 1300 RPM AND D375 (SERIES D) 430 HP Maximum @ 1300 RPM

Compact, modern heavy-duty diesels for greater power, efficiency and economy!





The Cat D397 Turbocharged Engine

Both the D397 and the D375 are also available as *roots blown, naturally aspirated* or *spark ignited* engines.

The Turbocharger . . . Exhaust Gas and Air Flow

Another example of Caterpillar leadership in action! The Turbocharger, driven by the engine exhaust, utilizes energy which would otherwise be lost. It packs air into the engine according to engine *load* for greater efficiency.

As shown in the diagram above, engine exhaust gases turn the turbine, which drives the compressor . . . the compressed air then enters the cylinders. Final result: more power on less fuel.

More than eighteen years of research have gone into these two new CAT* Turbocharged Diesels. Incorporating metallurgical, mechanical and aerodynamic advances, they are engineered to deliver higher horsepowers and lower operating costs at reduced noise levels. Their advance-design features are also available in D397 and D375 Electric Sets and Marine Engines.

With these engines in the Caterpillar line-up, you now have an even wider choice of compact, modern heavy-duty power to meet your requirements. Get the complete facts about these two new Turbocharged Diesels from your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN HEAVY-DUTY DIESELS

Annual joint N.S.G.A.-N.R.M.C.A. luncheon, with Louis G. Schilling presiding. The speaker was Douglas McKay, Secretary of the interior.

N.S.G.A. Convention in Chicago Draws Record Breaking Crowd

Features Largest Machinery Exhibits in History; Excellent Program, Outstanding Speakers

Another ON THE SPOT Report

THE joint convention held by the National Sand and Gravel Association and the National Ready Mixed Concrete Association at Chicago, Ill., from February 13 to 16 was very successful from any standpoint. Highly informative sessions, coupled with a biennial equipment show that took up three times greater space than had ever been provided in preceding years were thoroughly enjoyed by a record-breaking attendance and registration totalling more than 6,700 people. As in 1954, all meetings were held in the Conrad Hilton Hotel. The equipment show, however, was set up in the Coliseum, where it was expected that the exhibitors would have a better opportunity to provide more comprehensive displays.

Despite the greater space available, even this location proved to be somewhat inadequate, and several exhibitors were unable to get all of the space they would have liked to have in order to display their products. Nevertheless, all cheerfully accepted the necessity for rationing of available area, and the resultant exhibit was outstanding in its scope and timeliness to developments in the sand and gravel and ready-mixed concrete industries.

This was the 40th annual convention of N.S.G.A. and the 26th for the N.R.M.C.A. Both joint and simultaneous meetings were held by the two groups. Each group covered and discussed subjects pertinent primarily to its own field during the simultaneous sessions, while in the joint meetings material applicable to both organizations was presented.

On Friday, Saturday, and Sunday before the general convention, the Manufacturers Division of N.S.G.A., directors, and committees of both organizations held a number of business meetings. A hospitality hour was set aside on Monday evening, to provide for renewal of former contacts and for establishing new ones. A joint luncheon was held on Wednesday, at which time the featured speaker was the Honorable Douglas McKay, Secretary of the United States Department of the Interior.

With Monday's agenda devoted largely to meet-

ings of the two boards of directors, the greater part of the membership had an all-day opportunity to tour the extensive exhibit at the Coliseum. Wednesday afternoon was also left open for the purpose of providing those in attendance with additional time to visit the equipment show, which was, of course, open every day.

With the exception of the above, the convention schedule was well filled with sessions covering a wide range of subjects. In addition to the customary association reports to the members, the material presented included public relations, cement technology, the highway program, tax ramifications of depletion and depreciation, Washington reports, group insurance, labor problems, the industry wage pattern, sand classifying, abrasive resistance, exploration, marketing and merchandising, industrial radio, specifications, and aggregate technology.

As indicated in the foreword of the convention program, the schedule of subjects was set up on the premise that a serious business program was preferred by the membership. The fact that this was a sound premise was attested to by the capacity attendance at each session. Pre-eminent in the subject matter presented during technical sessions were items dedicated to the answering of management problems concerning the improvement of product quality and the reduction of operating costs.

Election Of Officers The report of the nominating committee was made by Albert R. Shiely, chairman, at the first individual session of N.S.G.A. members. He stated that the board of directors insists on representatives from various sections of the country, and had approved the following nominees — who were unanimously elected: Roy E. Weaver (Lincoln Sand & Gravel Co.), president; E. Phil Gemmer (Texas Construction Material Co.), vice-president; E. K. Davison (J. K. Davison & Bros.), secretary-treasurer. Harold E. Bender (Azusa Rock & Sand Co.), J. Paul Calhoun (Consolidated Gravel & Pipe Co.), and Howard W. Jordan (Metropolitan Sand & Gravel Corp.), were re-elected to the executive committee, while Ezra C. Knowlton (Utah Sand & Gravel Products Corp.) was newly elected to that committee.

Douglas McKay, Secretary of the Interior, with the retiring presidents of the two associations, John W. Murphy, Spokane, Wash. (left), N.S.G.A., and Louis C. Schilling, Miami, Fla., N.R.M.C.A.

Robert S. Barneyback (Henry J. Kaiser Co.), Charles E. Brady (B. F. Hedrick Gravel and Sand Co.), J. Paul Calhoun (Consolidated Gravel & Pipe Co.), Irving Crown (Material Service Corp.), and Ezra C. Knowlton (Utah Sand & Gravel Products Corp.) were all re-elected as directors-at-large.

Coming Conventions Plans for coming conventions and meetings are as follows: The 1957 joint convention of N.S.G.A. and N.R.M.C.A. will be at the Statler Hotel, Los Angeles, Calif., February 11-14. The 1958 joint convention will be at the Conrad Hilton Hotel, Chicago, Ill., February 9-13, with exhibits at the Coliseum. The 1959 convention will be at the Roosevelt Hotel, New Orleans, La., February 15-19.

The 1956 summer meetings of the boards of directors of the two associations will be at the Del Monte Lodge, Pebble Beach, Calif., October 1-3. The 1957 board meetings will be at the Manoir Richelieu, Murray Bay, Que., August 25-31. The 1958 meetings will be at the Lake Placid Club, Lake Placid, N. Y., September 27-30.

In 1955 for the first time the two associations held a joint Committee Week separate from the annual conventions. This was so successful that

Newly-elected N.S.G.A. officers: R. E. Weaver, president; E. Phil Gemmer, vice-president; and E. K. Davison, secretary treasurer.

it will be repeated in 1956, at the Jefferson Hotel, St. Louis, Mo., August 13-16.

Manufacturers Division The Manufacturers Division of the National Sand and Gravel Assn. held its meeting on the Friday preceding the convention. Chairman Robert P. McKenrick (Blaw-Knox Co.) reported on the arrangements for the machinery exhibition and other work done since the last meeting.

The new chairman of the Manufacturers Division is C. B. Laird (Eagle Iron Works). Vice-chairmen are D. McM. Blackburn (Hendrick Manufacturing Co.); J. C. McLanahan (McLanahan & Stone Corp.); W. A. Rundquist (Pioneer Engineering Works, Inc.); and E. D. Stearns (Barber-Greene Co.). The directors elected were: Emil Deister Jr. (Deister Machine Co.); John E. Dunn (Allis-Chambers Mfg. Co.); H. F. Lawrence (W. S. Tyler Co.); John F. Steffens (Ludlow-Saylor Wire Cloth Co.); M. W. Talcott (W. O. & M. W. Talcott, Inc.); Austin K. Thomas (Chain Belt Co.); R. B. Utt (Western Machinery Co.); Roy K. Wills (Baldwin-Lima-Hamilton Corp.).

Joint Luncheon At Wednesday's joint luncheon, Douglas McKay, Secretary of the Interior, gave an inspiring address in which he displayed an excellent knowledge of both industries. He took note of the fact that in 1955 the sand and gravel industry had taken first place in tonnage production among all minerals, displacing coal. Although he did not elaborate on a mention that commercial reserves of sand and gravel areas in the country, he stated that production of these materials had set a new record in excess of 500,000,000 tons in 1955. In visualizing this quantity to his listeners, he said, "If the quantity of sand and gravel produced annually in the United States were incorporated into a concrete road slab 24 ft. wide and 9 in. thick, that slab would be long enough to reach around the world four times."

He cited estimates of the Bureau of Mines that portland cement production capacity will be increased by 15 percent in 1956 and will be 26 percent greater by December, 1958. From these figures, he said, it is apparent that a substantial growth period is in view, if the aggregates requirements of the construction industry increase in conformance with the availability of cement.

Quentin Best, Consolidated Rock Products Co., Los Angeles, Calif., with the Rock Products 1955 safety trophy won by the Sun Valley plant in Class A competition.

Presidents Address The welcoming address made by John W. Murphy (Union Sand & Gravel Co.), N.S.G.A. president, on the first morning of the general convention sessions contained a resume of the association's activities during the last year, an expression of appreciation to the staff and officers, and a discussion of the problems facing the industry members both individually and collectively due to the unrestrained and growing power and potential of some labor unions.

As in past years, the finances of the association are in excellent shape, and provide not only sufficient resources for trade association efforts but also adequate reserves for financing any new endeavors deemed essential for the good of the industry by the members of the board of directors. The association membership has continued a steady growth, and at the present time stands at the highest level in the history of the group. In the last five years the active membership has increased 40 percent, and this enrollment accounts for 70 to 75 percent of the total sand and gravel production in the United States. Despite this impressive record, Mr. Murphy stated that this association should increase its efforts toward an even greater membership. An obvious benefit would be the enhanced prestige and stature of the association as a support in its dealings with various government agencies and offices in Washington, D. C., and elsewhere in the country.

Charles A. Horsky, counsel for the associations, who spoke on the wage-and-hour law.

The two fellowships sponsored by the association have been enlarged with respect to the annual allowance made to the engineering graduates studying under those grants. In addition, the association-sponsored Engineering Short Courses have proven most effective and have been well attended by customers of the industry as well as the member companies themselves.

The importance of good public relations to the welfare of the sand and gravel industry was also stressed. As a result of a meeting of the board of directors, a committee was appointed to study the problem with a view toward developing recommendations for the good of the member companies in attacking the problem. It was also stated that the board had authorized a survey of depreciation rates and practices, and a report on that survey had been completed and distributed to the membership. The same committee is now proceeding with a study of cost accounting problems in the industry.

The quarterly wage survey—which has been of prime importance for many years—has now been expanded to provide, semi-annually, a survey of the so-called "fringe benefits" paid by the industry. Mr. Murphy reiterated that it is the hope of the association that through these reports no member company will ever be in a disadvantageous position in negotiating labor contracts. It is desired that all possible information will be available to a negotiating member.

In continuing his remarks on the labor situation, Mr. Murphy suggested that, in his opinion, it is now time for the voting American public to insist that the industrial might of labor unions be controlled through legislation and directed toward the

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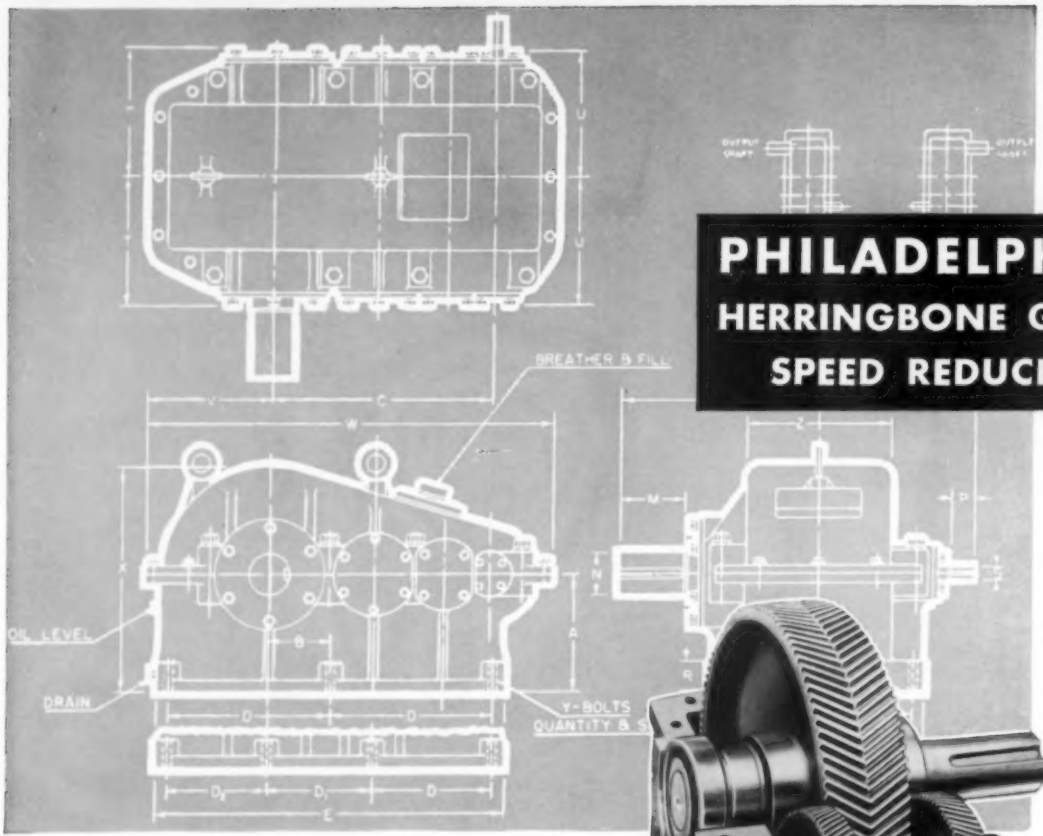

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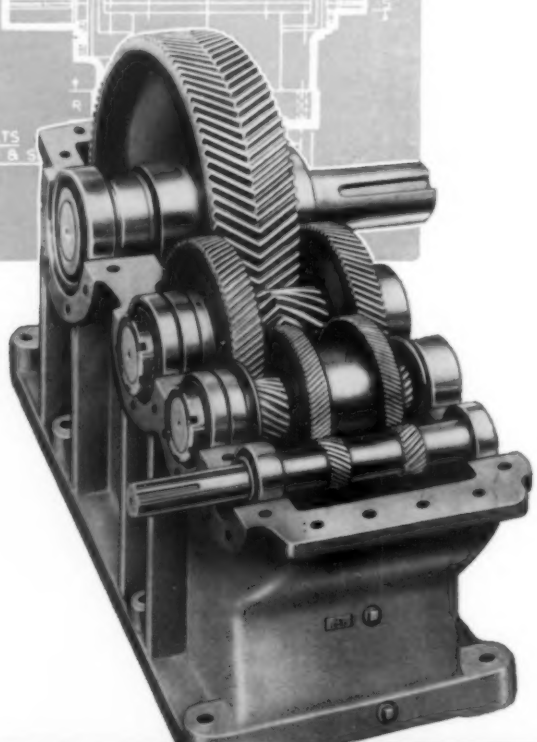

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E. Phil Gemmer and Dudley E. Baker, Texas Construction Material Co., Houston, Tex., with the 1955 Class B safety trophy won by the Romayor plant. This company's Eagle Lake plant won the Class A competition for 1954.

welfare of the economy and of the true laboring man—too often the one who has least control over his labor situation. It was considered that such legislation should not only control the unions' tremendous financial strength and size, such as is done with respect to industry, but also that the unions should be made to compete for members to the end that an individual (worker) may choose in a "free market" the services he desires.

Safety Contest Prior to the awarding of the *Rock Products* safety trophies—an annual convention feature—John W. Murphy, association president, noted that the 1954 trophies are based on the calendar year, formerly in effect, while those for 1955 represent the change to the new fiscal year ending July 1.

The winners of the 1954 contest were: Class A (more than 100,000 man-hours)—Texas Construction Material Company, Eagle Lake Plant, Houston, Tex., the trophy being accepted by Dudley E. Baker, vice-president and production manager; Class B (50,000-100,000 man-hours)—Pacific Coast Aggregates, Inc., Fair Oaks No. 111 plant, San Francisco, Calif., whose trophy was accepted by Frank J. Brugger, plant superintendent; Class C (less than 50,000 man-hours)—American Aggregates Corporation, Fort Jefferson plant, Greenville, Ohio, for whom the trophy was accepted by M. G. Kerr, Michigan district manager.

The 1955 contest winners were: Class A—Consolidated Rock Products, Sun Valley plant, Los Angeles, Calif., the trophy being accepted by Quentin W. Best, vice-president; Class B—Texas Construction Material Company, Romayor plant, Houston, Tex., for whom Dudley E. Baker received the trophy; and Class C—Pacific Coast Aggregates, Inc., Lemon Cove plant No. 133, San Francisco, on whose behalf W. S. Brown, safety engineer, accepted the award.

Ahearn's Report In his annual report to the two associations, Vincent P. Ahearn, executive secretary, presented a comprehensive coverage of timely issues and subject matter ranging from construction record and outlook to public relations. He pointed out that even the optimistic view held with respect to the volume of new construction expected during the last year was proven to be conservative to the extent of several billion dollars. Further, he predicted that new construction volume expected in the coming months, based on predictions by the U. S. Departments of Commerce and Labor, would reach a new record level for the 10th successive year.

By considering the percentage relationship which sand and gravel production bears to construction volume, the report states that an estimated 375,000,000 tons, valued at $405,000,000, was produced in 1955. The fourth annual study of the ready-mixed concrete industry conducted by N.S.G.A. officers in 1955 indicated that 1,218 companies reporting used 103,397,272 tons of fine and coarse aggregate, and 82,346,330 barrels of cement.

Mr. Ahearn's report also dwelled at length on the matters of the pending highway program; tax developments concerning percentage depletion, transportation tax, and depreciation practices; freight rates; labor relations, including application of the wage and hour law to the sand and gravel industry, and group insurance; safety programs; industrial radio; waterways toll; public relations; etc. With respect to public and community relationships, committee discussions have brought out the fact that most of the public indignation against the sand and gravel industry is based on the manner in which delivery trucks are driven. It was stated that the general public makes no distinction between the company employee driver and independent contractor if the truck is carrying sand and gravel and is driven irresponsibly.

In concluding, Mr. Ahearn stated that the two industries have a remarkable production record during times of both war and peace. Maintenance of that record, it is felt, is contingent to a large degree on the increasing consciousness of management in the matter of controlling costs, and a sensible approach to pricing of products. He also stated that each of the two associations enjoys a healthy financial status.

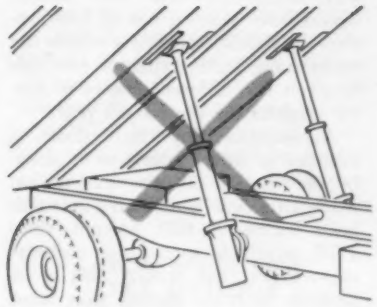
Warren C. Brown, Pacific Coast Aggregates, Inc., San Francisco, Calif., standing beside the Rock Products safety trophy for Class C competition in 1955, which was won by the Lemon Cove plant No. 133.

Walker's Report In his annual report to the membership on the engineering divisions of both associations, Stanton Walker offered in our opinion one of the most factual, accurate, and inclusive reports we have heard. Outlining the scope of activities of his work, Mr. Walker summarized this as follows: (1) Conduct laboratory research in the facilities sponsored jointly by the two associations at the University of Maryland. (2) Publish many papers and reports covering laboratory work and other information of interest to the industries, in the form of technical information letters, informal mimeographed reports and in printed publications. (3) Conduct an engineering consulting service for members. (4) Represent the industries in the work of many different technical organizations of interest to members, such as A.S.T.M., A.C.I., H.R.B., and A.R.E.A.; and offer similar representation before specification writing bodies, such as state highway departments and departments of the Federal Government. (5) Conduct the annual short course of instruction at the University of Maryland. (6) Do anything that a member wants done in the way of miscellaneous chores.

Mr. Walker named and detailed the work of each member of the relatively small staff on duty at Washington, D. C., and College Park, Md. described the associations' laboratory work as the backbone of the

GRAVITY dumps the load...in

ONE second



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One-second dumping earns a substantial increase in yardage output, too. For example — take a typical 1,000-foot haul where you would normally make 16 trips an hour. By saving an average of 20 seconds dump-time on each trip, Dumptor gains 320 seconds, or 5.3 minutes more productive haul-time per hour. You get 17½ trips, instead of 16. This, alone, adds 9% to hourly production.

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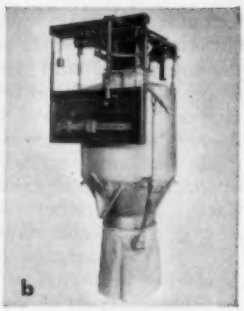
a

Water Batchers
give close quality control of concrete. Semi- or full-automatic. 120 and 240-gal. capacities.

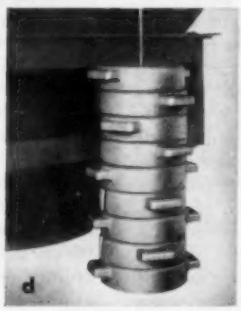


b

Cement Batchers
6 sizes from 10 to 38 cu. ft. Scale capacities from 700 to 3000 lbs. Semi- or full-automatic controls.

c

Single-Material Batcher
properly sized for 1¼ cu. yd. batch. 2560-lb. beam capacity for stone — 1520-lb. beam capacity for sand.



d

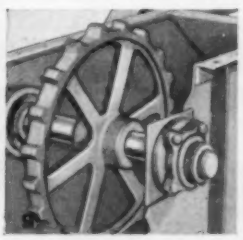
Batcher Test Weights
available in sets of nine 50-lb. calibrated units, and two 25-lb. steel hangers. Assure accurate weigh-batching.

e

Yard Bin
is ideal for loading trucks where no batcher is required. 9-ft. clearance under discharge gate. Holds 35 cu. yds.

f

Elevator Buckets, Chains
2 types, 7 sizes of buckets for aggregates and cement. Johnson long-life steel chain has carburized knuckles.

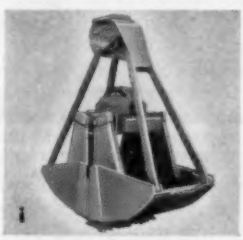


g

Chain Sprockets
19-tooth, chilled-rim cast iron with heavy split hub, double-rim lugs. Also, 12-tooth cast-chrome manganese.

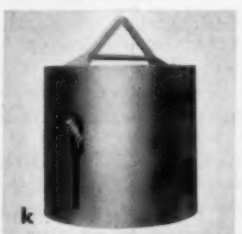
h

Elevator Safety Cage
Johnson ladder safety cage, welded to elevator casing, is 28 inches in diameter. Costs only a few dollars per foot.



i

Clamshell Buckets
all-welded, smooth inside and out. Fast-filling, easy closing. Manganese cutting edge. 3 types, 10 sizes, ⅜ to 3 yds.



k

Concrete Buckets
3 types: Finger-Tip Control in ½ to 2 cu. yd. sizes; 1 to 4 cu. yd. Johnson-Dravo; and 2 to 8-yd. Lo-Slump buckets.

l

Little Titan Scale
accurately weighs loaded barrows. Has one, two or three 500-lb. weigh-beams. Light — 2 men can carry.

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technical committee activities, in outlining the research program, its present status, and its projected scope. Much time has been spent of late on the studies of the flexural strength of concrete, which has been made the basis for the acceptance of concrete in many cases. Work was started last October, Mr. Walker said, in a new and major investigation on the variation in strength-producing properties of cements, a preliminary report of which was presented at this meeting. The time of the laboratory for 1956 is already almost completely scheduled, mainly to complete these major programs.

The publications program of the two associations has been very much accelerated for 1956. In the future all confusion as to which association is concerned with a given publication will be erased by giving each issuance a Research Laboratory Publication number. Nine such publications were issued in 1955, plus 11 technical information letters for each association, 8 of these being of joint interest. Mr. Walker feels that this program does more than anything else to establish prestige for the associations with customers as a reliable source of information.

Work of the 38 technical committees of the association on which Mr. Walker serves obligates much of his time. The selection of a Committee Week in 1955 permitted an efficient co-ordination of the many duties previously spread over odd times throughout the year. Short courses, he feels, are now a permanent part of the program, ten major meetings of this nature having been held in 1955. He made a summary of these courses and outlined objectives for future ones.

Washington Report In continuing what has become an expected feature of the yearly meetings, Vincent P. Ahearn made his annual Report on the Washington Scene to a joint session of the two associations. The subject of the report was not only timely but one which has recently occupied the thoughts of all Americans, plus a large part of the rest of the world's population — President Eisenhower's physical well being and plans for the future.

Mr. Ahearn described the consternation and concern, which transcended political lines, resulting from the President's illness. A review was made of the backgrounds of men whom the Republican party might consider for nomination in the event that Mr. Eisenhower should not be available. It was pointed out that the narrow margin of control now held by the Democrats in Congress would probably increase if the Republicans did not have the President at the head of their ticket.

Adequate Highways In the first joint session of the two associations, Ezra C. Knowlton (Utah Sand and Gravel Products Corp.), who along with the executive secretary had last year been instructed by the association board of directors to work with congressional and other groups toward resolving problems in the new highway legislation, presented a highly informative resume of the current situation in a paper entitled *Adequate Highways for the United States.*

A history of the legislative activity which resulted in four bills going down to defeat during the first session of the 84th Congress was presented. Graphic representation of the dimensions of these bills is shown in an accompanying chart. It was pointed out that quick Congressional approval could hardly be expected due to the size and complexity of the highway problem, along with the fact that the program was the largest in size ever considered by any legislative body in world history.

Some of the objectionable features of the above bills included these: stipulations that for states to qualify for interstate funds they were to freeze the size and weights of motor vehicles at specified limits; that in states whose laws prohibited credit to public utilities for enforced moves due to highway charges Federal Aid funds would be used up to a fixed proportion of the costs; and that the wage provisions of the Davis-Bacon Act should apply to all projects financed by Interstate Highway Funds. Mr. Knowlton pointed out that it was doubtful whether any of these three invasions into the field of state sovereignty were sponsored or supported by a single person from the Bureau of Public Roads, any other federal administrative agency, any state highway department, or any state administrative agency.

He added that the most publicized objections to the bill as proposed by the Fallon Committee centered on the efforts of that committee to write into the authorization bill its financing provisions, and the inclusion of what is considered to be an inequitable increase of federal excise taxes on heavy trucks, buses, and heavy-duty tires and tubes.

The first would, in effect, bypass the historic functions of the House Ways and Means Committee—unprecedented in the history of highway legislation—and the second would have thrown out of relationship the balance of equity which the states have been trying to establish between the different classes of motor vehicles for the last 45 years.

Accompanied by chart slides, a number of other points were made by the speaker. It was shown that while cars and trucks on our roads have increased 600 percent since 1920, available money for highway construction has shown only a 50 percent increase during that time. In comparing the Federal Interstate system with the balance of all streets and highways in the country, the vitally important interstate system contains 40,000 miles as opposed to almost 2,900,000 miles in the rest of the country's highway and road network. Nevertheless, the strategic interstate system carries one-seventh of the total traffic and is the greatest federal responsibility both in peace and war. Toll road developments, while considered to be a temporary expediency and not a permanent solution of the highway problem, have furnished convincing evidence that the American people are willing to pay for adequate public highways.

In concluding on an optimistic note, Mr. Knowlton reported that there is evidence of sincere, strenuous effort being made by those national associations and groups, upon which Congress has historically relied for help in highway matters, toward resolving differences. Favorable developments were stated to include the Administration's agreement with a pay-as-you-go financing plan, the elimination from the new Fallon bill of financing considerations (which it is understood will be handled by the House Ways and Means Committee), and a provision for financial credit to those states which have completed toll or free roads that form a part of the interstate system and which have been completed to a satisfactory standard.

Special emphasis was placed on the statement that there is no room for overconfidence. It was stressed that failure (to pass a highway program bill) could be repeated if public interest and support are not accorded Congress in a greater degree than was evident during the last session. A statement of policy was endorsed and promulgated by the sand and gravel association, along with several other important national groups that highway development

has lagged to the point where a highway emergency exists; that interstate system is of vital national importance (commercially and militarily) and should have 90 percent of the cost of its improvement borne by the Federal Government; that federal funds for the other highway systems should continue to be matched by the states on a continuing 50-50 basis; and that the question of financing should be considered by the appropriate committees under the usual procedures of Congress.

LABOR, WAGE LAW, TAX OUTLOOK

Los Angeles Strike The background and consequences of the recent 90-day strike experienced by producers in the Los Angeles area was effectively described for a joint session group by Vernon E. Lohr (California Materials Co.). He pointed out that the strike was a David and Goliath situation where a small local group of companies pitted their strength against the power and practically inexhaustible resources of an international labor union.

Of the 29 companies which banded together as a bargaining group, 14 are sand and gravel producers, and 15 are ready-mixed concrete operators. Combined, they represented 99 percent of the productive capacity of these materials in the Los Angeles area.

Despite what Mr. Lohr termed as the Teamsters strategy of clouding the real issue with a number of excessive wage and hour demands, the actual point of controversy which resulted in the walk-out was the union's demand for a pension plan over which it — the union — would have control. The Teamsters had already been successful in forcing such a demand to be met by the brewery industry.

A study of this pension plan by the aggregate and ready-mixed concrete producers proved that the *bulk* of the money in that pension fund was *not* necessarily for pensions. With the ironic twist that the companies against whom the strike was called were insisting, as a matter of principle, that the pension fund for their union labor be confined to such use, the Teamster officials, who apparently had a lesser regard for this protection of the union members' pension fund, ordered a walkout. It must be said that the industry members involved were of the opinion that the union officials with whom bargaining was attempted apparently operated completely on the instructions of a higher echelon.

Mr. Lohr reported that the industry strike strategy incorporated two efforts—legal, and public relations —a suit filed in Federal Court for damages, and an injunction, charging unfair labor practices specifically in violation of sections 302 and 303 of the Taft-Hartley law. This action proved somewhat less than effective in view of the fact that the presiding jurist handed down an opinion *after* the strike had ended.

In the public relations effort, it was stated that difficulty was encountered with the local press in obtaining publicity which would also state the industry's position. Advertisements— as news releases—were then taken in order to get factual information to the striking employees, customers, and the general public. The latter showed an unsurprising apathy until the pinch was felt. This pinch took many forms—a full halt of construction on freeways, schools, and (most importantly for public welfare at that time) flood control

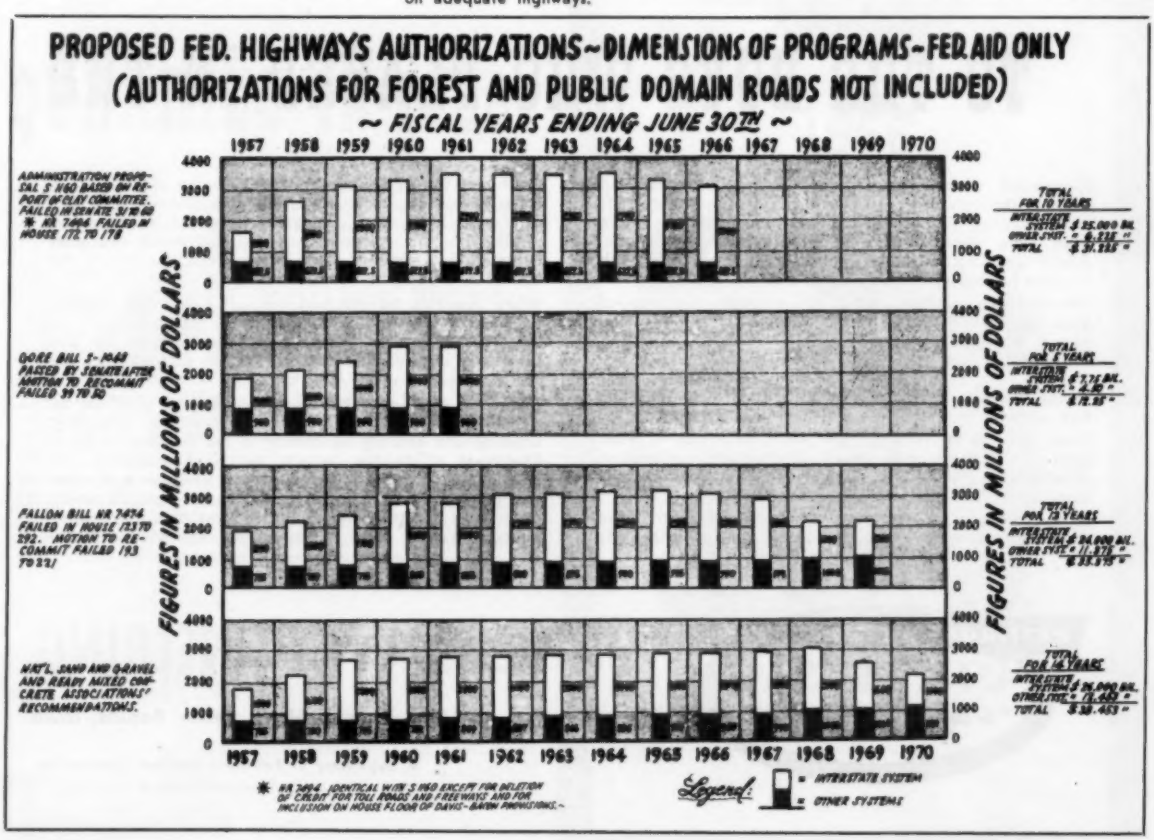

PROPOSED FED. HIGHWAYS AUTHORIZATIONS ~ DIMENSIONS OF PROGRAMS ~ FED. AID ONLY
(AUTHORIZATIONS FOR FOREST AND PUBLIC DOMAIN ROADS NOT INCLUDED)
~ FISCAL YEARS ENDING JUNE 30TH ~
1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970
FIGURES IN MILLIONS OF DOLLARS
ADMINISTRATION PROPOSAL S 1160 BASED ON REPORT OF CLAY COMMITTEE. FAILED IN SENATE 51 TO 60 * HR 7474 FAILED IN HOUSE 172 TO 178
GORE BILL S-1048 PASSED BY SENATE AFTER MOTION TO RECOMMIT FAILED 39 TO 50
FALLON BILL HR 7474 FAILED IN HOUSE 173 TO 202. MOTION TO RECOMMIT FAILED 193 TO 221
NAT'L. SAND AND GRAVEL AND READY MIXED CONCRETE ASSOCIATIONS' RECOMMENDATIONS.
TOTAL FOR 10 YEARS
TOTAL FOR 5 YEARS
TOTAL FOR 15 YEARS
TOTAL FOR 14 YEARS
* HR 7474 IDENTICAL WITH S 1160 EXCEPT FOR DELETION OF CREDIT FOR TOLL ROADS AND FREEWAYS AND FOR INCLUSION ON HOUSE FLOOR OF DAVIS-BACON PROVISIONS.
Legend
= INTERSTATE SYSTEM
= OTHER SYSTEMS

Chart used by Mr. Knowlton in his address on adequate highways.

TO THE BOYS WHO PLAYED IN THE

Remember those carefree, boyhood days when you romped through the old stone quarry? Limestone cliffs were towering castle walls in your imaginations. Rock piles were western forts to hold against the Sioux. Bluffs and ditches were mountains and valleys with outlaws lurking at every bend.

The day they brought in the new crusher, you stopped your games to watch as the engine chugged to life. To you it was just another piece of machinery — and a wonderful target for stones when the men had gone. But the echoes barking off quarry walls that day were crying the birth of a new industry. Modern roadbuilding had arrived!

Some of you never quite got the quarry out of your systems. You became quarry men and roadbuilders yourselves; and while you grew to manhood, the crusher you saw that day matured with you.

It was a German immigrant, E. A. Velde, who began its manufacture at Cedar Rapids, Iowa, in 1906. He combined the best feature of the Dodge crusher — a large bite at the receiving end of the jaw — with that of the Blake crusher — a large bite at the finishing end of the jaw. The result was the Universal overhead eccentric jaw crusher with "force feed" action — to deliver a dependably uniform product.

When America transformed her dirt roads into ribbons of concrete during the early 1900's, the uniformity of this crushed product created a huge demand for the Universal crusher and it was sold in carload lots the world over.

From this beginning, Universal became the producer of the most complete line of portable crushing, screening, washing and loading equipment in the industry. Today, Universal offers the largest overhead eccentric jaw crusher on the market, the Universal 4448 — a product of 50 years in engineering design and manufacturing experience. Improvements and refinements have been added: Welded steel construction, anti-friction bear-

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING

619 C Avenue N.W., Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation,

QUARRIES IN 1906

ings, hydraulic bearing removal — but the basic principle of overhead eccentric action, introduced by Universal in 1906, is still the standby.

The boys who played in the quarries in 1906 and the Universal crusher came a long way together. Many more since then have grown up with the roadbuilding industry and like the men who laid our first highways have come to know and respect the quality of Universal equipment.

These men are now busy turning the quarries into super-highways and farm-to-market roads. They're working with Universal machines to insure tomorrow's prosperity on the lifelines of commerce they are building today.

To these men, who demand crushing equipment soundly conceived, expertly designed and precisely engineered, we pledge they will find the products of the Universal Engineering Corporation as unexcelled for performance and reliability in the future as they have been in the past.

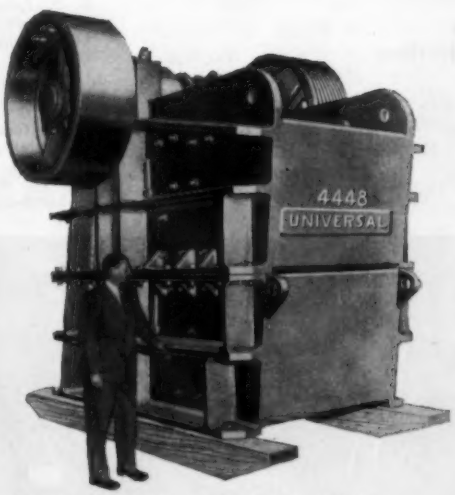
CORPORATION

4700 W. Division Street, Chicago 51, Illinois

Universal's original overhead eccentric jaw crusher.

1906

1956



Universal's newest overhead eccentric jaw crusher — the largest in the world.

projects; 100,000 construction workers idled; and an estimated payroll loss of $150,000,000. All in all, over 250,000 people suffered economic or property losses.

After the industry had made several offers, including a 3-year contract and a revised pension plan, it was stated that bargaining efforts including those of federal conciliators proved ineffectual. Finally the N.L.R.B., on December 23, issued a formal complaint which threw out the pension issue, and the teamsters went back to work on January 9 on the industry's pre-strike offer of an hourly 15-cent wage, and a 2½-cent pension, increase. The pension plan is presently being arbitrated.

For the enlightenment of those who have not had the opportunity to engage in "bargaining" with unions of this type, Mr. Lohr presented these points which were learned in this strike:

1. The Teamsters had not counted on the solidarity maintained by the 29 companies, but had apparently expected to "divide and conquer" as they had in other cases.

2. The strike was not popular with many of the 1,600 Teamsters involved.

3. Many Teamsters reported that they had no opportunity to vote on the strike call, and were completely unsuccessful in prevailing upon union officials to call a meeting (subsequent to the beginning of the strike) where the actual reaction of members could be manifested.

Labor Negotiations A *Panel Discussion of Labor Negotiations in Key Areas in 1955* was conducted at a joint session by Norman J. Fredericks (secretary, Koenig Coal & Supply Co., Detroit), James A. Nicholson (president, Nicholson Concrete Co., Toledo), and Raymond F. Powell (president, Concrete Inc., St. Louis).

Mr. Fredericks reported that an association of producers in Detroit has resulted in the formation of the Transit Mix Concrete Institute. The by-laws of this group provides for a committee of five members, plus an attorney, who will operate as a bargaining group in labor negotiations for the operator members of the institute. It was stated that this committee proved its worth in December, 1954, at which time it obtained in bargaining sessions a 6-year contract with the union, and successfully countered labor demands for high wage and welfare increases, plus a guaranteed working period (a 40-hour week in winter and 48-hour week in summer) with more realistic amounts.

Mr. Nicholson pointed out certain features of labor negotiations in Toledo that paralleled some in the Los Angeles strike. He stated that when a particular union local was successful in getting Toledo lumber dealers signed up on a contract, the local thought the building materials industry would automatically follow suit. When this proved untrue, the union ordered a walk-out, despite the efforts of the building material producers toward negotiation. Mr. Nicholson's further comments illustrated the point that, here again, union labor was not in full sympathy with a strike, but that union officials would not call a meeting of union members.

As a departure from the parallel with the Los Angeles strike, it was reported that some industry men—not, however, on the association's bargaining committee—displayed a willingness to knuckle under to union demands. Mr. Nicholson emphasized his feeling that "management must resist patterned, area-wide contracts" and act as a group. Further, he stated that industry should come to the bargaining table prepared with demands of its own.

Mr. Powell's comments on a 13-day strike last year in St. Louis also pointed out what can happen when a union initiates a campaign for patterned contracts. In this case, St. Louis building contractors acquiesced in union demands for certain benefits, while the building material associates of Mr. Powell did not agree with those same demands when confronted with them by the union and, as a consequence, had a strike called

Right: Ken Lindsay Sr., Iowa Manufacturing Co., and Fred Esterline, Susquehanna Quarry Co., Millersburgh, Pa.

Below, left: Oscar E. Olson, Diamond Iron Works, and R. F. Palmer and M. J. Rood, both of Verona Redi-Mix, Verona, Wis.

Below, right: J. W. Beam, Joe Leaverton and Paul Andrews, all of the Melvin Stone Co., Melvin, Ohio, and H. W. Newton, the Barber-Greene Co.

William Skoda and R. Harris of Ireland & Lester, St. Joseph, Mich., with J. H. Guilfoil, Ray Thompson, and Mel Martin—all of Sauerman Brothers, Chicago.

against them. A suggestion that labor negotiations on behalf of the industries represented by these two associations should be handled by a professional was accompanied by the statement that the members should no longer be surprised at spectacular union demands.

In a short discussion period that followed, Vincent P. Ahearn, stated that a professional negotiator should not be hired outside of the associations but be developed within their own ranks. He cited as an example the bargaining committee of the Los Angeles producers. It was added that familiarity with the industries' situation and problems was mandatory on the part of an industry negotiating representative.

Federal Wage Law Charles A. Horsky, Covington and Burling, Washington, D. C., counsel for both associations, dealt with various aspects of several topics under the Fair Labor Standards Act, such as exemptions, record keeping, "basic rates", etc., which present recurrent problems to all industry. As to coverage of employees under the Wage-Hour Act, he said that this applies to interstate movement of materials only, and that the employees of companies doing only a "local business" would be exempt from such coverage. He cited several cases in point of this interpretation, and of implications arising therefrom.

He emphasized that employees in our industries are covered by the act when the materials are used locally for the repair, maintenance, or reconstruction of any instrumentality of commerce. He reviewed the exemptions applying to the so-called "white-collar" workers — executive, administrative, and professional employees; the first of these classes, to be exempt, must be paid not less than $55 per week. The two latter classes would be exempt from coverage if they were paid not less than $75 per week. There may be some revisions of this salary limitation after the act goes into effect on March 1, 1956.

In the computation of hours worked any "preliminary" or "postliminary" time must be included in pay time if the work in those periods was "an integral part of the principal activity of the employee". Mr. Horsky covered the significant points of record keeping, basic rates, and other federal labor standards statutes which may have some relationship, such as the Davis-Bacon, the Copeland, the Miller, and the Walsh-Healy Acts. He warned the producers that they should never let themselves get into a position where additional claims are asserted against them by their employees, saying that this could be prevented by having a thorough knowledge of the applicable acts.

Industry Wage Pattern A summary of the wage pattern and other developments in the labor relations picture in 1955 was made by Kenneth E. Tobin Jr., associate executive secretary. He reported that the scope of the questionnaires from which the quarterly wage surveys and semi-annual employee benefits surveys are compiled has been enlarged. It was stated that the unusual uniformity in wages and other employee relations throughout the two industries was apparently due to the predominance of Teamsters union contracts.

While other unions that have established collective bargaining relationships in these industries include the Operating Engineers, the Machinists, and the Common Laborers, the most widespread is the Teamsters. The latter, showing little regard for jurisdictional lines, have frequently organized the production employees as well as the drivers.

It was shown that there was a distinct pattern of fantastic demands on the part of the union locals throughout the country and as a consequence, unlike 1954, there were Teamsters' strikes in Los Angeles (discussed elsewhere in this article), Fort Wayne, and Reno. Eighteen other strikes lasting a month or less were also reported.

Sixty-one of the operators replying on the associations' questionnaire indicated the granting of an increase in the straight-time hourly rate in 1955. The average was 11 cents per hour, as compared with the average increase of 12 cents per hour for all industry.

With respect to the so-called fringe benefits, Mr. Tobin said that as reported by the U. S. Bureau of Labor Statistics the cost of fringe benefits averages nearly 25 percent of payroll and is increasing. There is a growing trend toward liberalization of vacation plans—the most familiar type of fringe benefits. An intensified union campaign for a guaranteed work week was made last year, and it was stated that many producers, who successfully resisted this demand then, expect the unions to make an even more determined effort to obtain this provision in the 1956 contracts. As a corollary to the guaranteed work week, several companies have reported demands made by the unions last year for a guaranteed annual wage.

Mr. Tobin indicated that group insurance or health and welfare plans have become widespread throughout these two industries in recent years. One feature of this growth concerns the success of many industry members in prevailing upon the unions to accept the group insurance plan of these two associations in lieu of contributing to a union health and welfare fund.

In addition to the foregoing phases of labor developments, the speaker mentioned two other dangerous proposals made by the Teamsters—(1) the 'hot cargo' clause, which would in effect result in forcing an industry member who signed such a contract containing this provision to assist the union in its boycott of other employers, and (2) the Teamsters' demand for advance acceptance of a multi-state or state area agreement.

In concluding, Mr. Tobin stated that it is evident from the results of labor negotiations in these two industries in 1955 that the unions will continue their aggressive drive for higher wages and further employment benefits without regard to economic realities or capacity to pay. He added that the problems of labor relationships, whether or not the employees of a particular company are represented by a union, demand the personal attention, throughout the year, of the principal executives of the industry.

1956 Tax Outlook As in previous association meetings, John T. Sapienza, association tax counsel, delivered a talk on the tax outlook for 1956 which concerned the application of certain sections of the Internal Revenue Code to the two industries. In the absence of federal legislation at this time, it was still the opinion of Mr. Sapienza that both corporation and individual tax rates would continue at their present levels, with the 52 percent corporation rate extended. He pointed out that two identical and bipartisan bills have been introduced which would effect the extension until April 1, 1957. Government officials have stated that a reduction of this rate by only 5 percent would result in a $2,000,000,000 annual revenue loss.

With the exception of the above probable action on corporation levy, the tax situation is uncertain. Considering that 1956 is a political year, it was stated that there may be some small chance of a reduction in individual taxes.

The prospect of no tax legislation also is reported to encompass the percentage depletion situation. A possible exception would hinge on the oil and gas industries' 27½ percent depletion rate which is being accorded considerable attention in Washington. A 15 percent rate is reportedly under consideration. Along the same lines, Mr. Sapienza stated that the government had conducted a survey and study of rates applied to all eligible minerals, and that the Treasury Department officials appear to be leaning toward a uniform rate for all.

Administrative developments in percentage depletion during 1955 were not extensive, largely owing to the fact that regulations are still pending. It was said that the Treasury Department ascribes the hold-up in regulations (pertaining to depletion) mainly to an effort to establish a definition of what constitutes an operating unit.

With respect to the election made available for aggregation of properties, Mr. Sapienza stated that such an election, if already made for current taxable years, can be revised by filing an amended return (or returns) within 90 days from the date the pending regulations are issued. In mentioning other features involved in the computation of the statutory deduction, he said that Revenue Ruling 55-13 concerning cash discounts provided for reducing gross sales by these amounts prior to computing depletion by applying the applicable rate. It was suggested that if these discounts have been disallowed, the individual operator should protect himself in the event of favorable litigation on a test case by filing a protective claim.

Another ruling, 55-251, involving the allowance of depletion in the case of dredged river sand, contains, generally speaking, these points: the economic interest test cannot be met; the deposit is not depleted because of constant replenishment by the river; and no depletion is allowable on the sale of material recovered from the spoil of earlier dredging. Mr. Sapienza stated that efforts are being made to obtain legislation which would offset the foregoing ruling and would provide a percentage allowance for this type of operation.

A summary of recent court decisions favorable to clay and talc producers was presented. These decisions were primarily concerned with

A part of one room of the machinery exhibits at the Coliseum.

the matters of allowable processing costs that precede depletable gross income. In both cases cited—Cherokee Brick and Tile, and Hitchcock Corporation *v.* Townsend—the full price of the finished products (pulverized, sawed, packed, burned, shaped, etc.) was allowed.

With respect to depreciation, it was reported that due to the general dissatisfaction with the proposed regulations issued in 1954 these were voided. A second set was issued last November 11, and they are now under consideration. Changes made in the latter include among others: (1) applying the taxpayers' experience in determining a useful life for depreciation of equipment, as opposed to using an industry-wide figure, and (2) restricting total depreciation claimed over the life of the equipment to an amount which represents the difference between cost and salvage. In other words, salvage must be taken into account.

The proposed regulations will also allow a new election of depreciation method, if so desired, within 90 days of the issuance of the final regulations. Mr. Sapienza pointed this out because of his impression that under the new proposed regulations the declining balance method may be more advantageous and should be elected because salvage may be disregarded until the final period, and a change to the straight line method can be made at a later date without first obtaining written consent from the Commissioner of Internal Revenue.

This photograph was taken at the ladies' luncheon and style show in the Narcissus Room at the Marshall Field and Company restaurant. Models not shown.

ZONING, PUBLIC RELATIONS AND REGIONAL ASSOCIATIONS

Zoning Problems In the opening comments of his paper on *Planning by Zoning Authorities for Development of Sand and Gravel Reserves,* Robert Mitchell (president, Consolidated Rock Products Co.) remarked on the recent Los Angeles strike in which he and his associates were involved. He stated that had it not been for this association's support, it would have been doubtful whether the 29 companies concerned could have withstood the power of the labor bosses.

In reference to zoning, it was said that this is integral with community relationship, and despite the fact that the problem originates on a local level and a solution must be initiated there, the matter affects everyone, nationally. Describing the growth of zoning complications in his area, Mr. Mitchell pointed out that between 1929 and 1955 the population of Los Angeles County grew from 1,250,000 people to 5,250,000. Such an influx created zoning difficulties there, as it would anywhere else in the country. A case was cited of a plant that had operated in a certain area since 1909 was now faced with increasing public demand to move in order to make way for a housing development. Not only housing, but also flood control projects are eliminating available reserve land in the Los Angeles area.

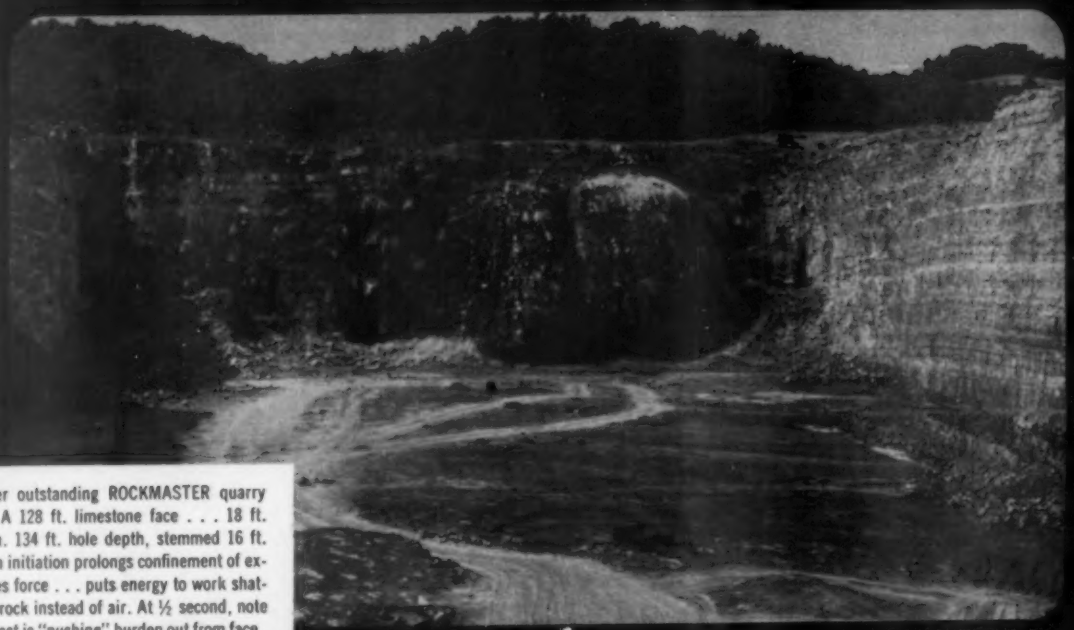
Due to the successful prosecution of an operator's suit in superior and federal courts, the Los Angeles city council became aware of the danger of diminishing gravel reserves and authorized a survey of the situation. As a result, it was stated, a memorandum was recorded recommending a resolution that available sand and gravel areas be protected, and that the public welfare would be best served by a good zoning practice that would provide zoning according to the best use of the land. An ordinance was passed that established certain areas as "G" zones (including properties already designated as gravel land), and these cannot be rezoned. However, operators must comply with fencing, screen planting, offset, berm width, and operating period regulations.

Mr. Mitchell added that producing sites in unincorporated areas of Los Angeles County are faced with the problem of incorporation which could result in new zoning and a threat to retention of reserve land. It was further stated that zoning is a potential political club, wielded

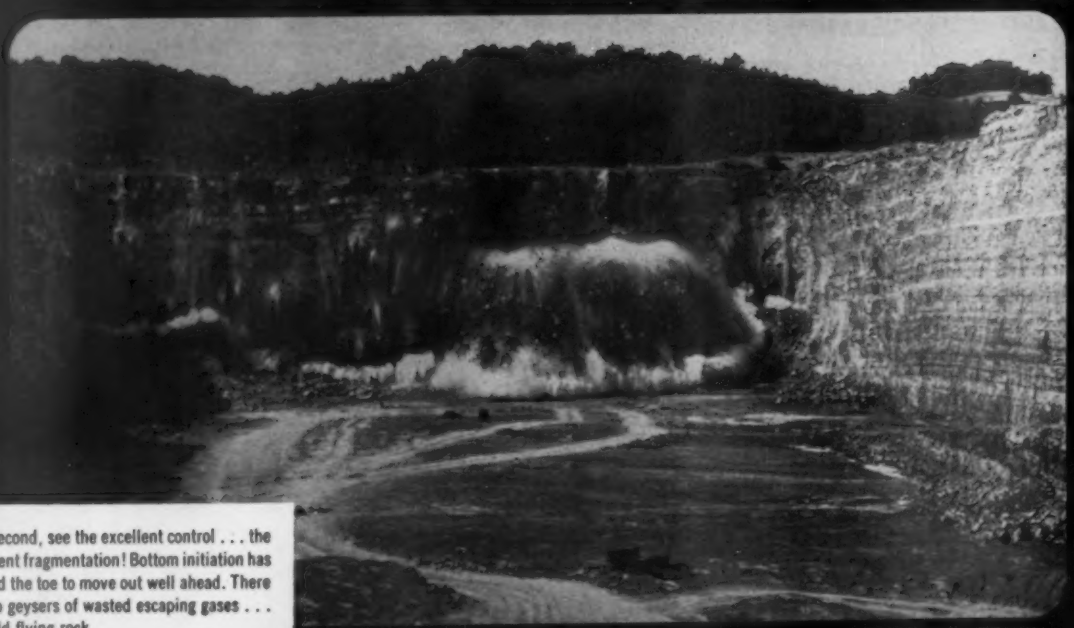
Left: John H. Kobel, Nordberg Manufacturing Co., and Earl E. Iffland, John C. Iffland Lumber Co., Torrington, Conn.

Right: Henry, Alvin, and Richard Van Zee, Rock Valley Cement Block and Tile Co., Rock Valley, Iowa, and R. G. King, Master Builders Co., Cleveland, Ohio.

For maximum shovel production, less wear and tear on equipment . . .

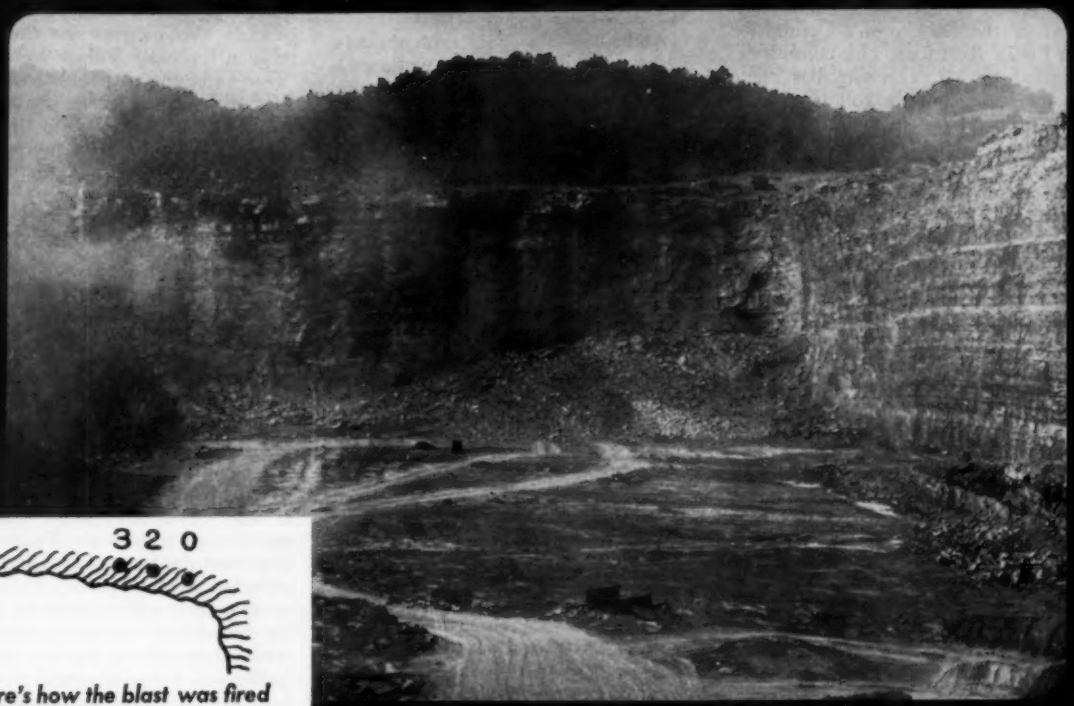


Another outstanding ROCKMASTER quarry blast! A 128 ft. limestone face . . . 18 ft. burden. 134 ft. hole depth, stemmed 16 ft. Bottom initiation prolongs confinement of explosives force . . . puts energy to work shattering rock instead of air. At ½ second, note how blast is "pushing" burden out from face.



At 1 second, see the excellent control . . . the excellent fragmentation! Bottom initiation has caused the toe to move out well ahead. There are no geysers of wasted escaping gases . . . no wild flying rock.

PROLONGED CONFINEMENT COUNTS



Here's how the blast was fired

Progressive series pattern
3 holes
Caps: ROCKMASTER delays 0, 2, and 3
Explosives: Atlas Apex No. 4 HV
and Atlas 75% Giant Gelatin

Prolonged confinement really pays off! Noise and vibration have been held to a minimum. There's good, balanced breakage . . . no secondary shooting required. Here's a well-displaced 22,000 ton muck pile ready to be worked. Notice that good shooting has kept the quarry face straight and clean!

PROLONGED CONFINEMENT—the Rockmaster® way

The proof of the shooting is in the muck pile! Good shooting here at Watauga Stone Co., Watauga, Tenn., gives good uniform breakage and good displacement. This means better loads of well fractured material in the shovel and trucks . . . less wear and tear on equipment . . . economies all along the line.

Secret of this good shooting is *prolonged confinement.* The blast, initiated at the bottom of the holes with ROCKMASTER millisecond delay electric blasting caps, pulls the toe first and expends itself working on the burden. It's this right combination of ROCKMASTER blasting caps and Atlas explosives that shows—

- **good control**
- **improved breakage**
- **greater efficiency**
- **better public relations**

To get the most out of your blasting methods and your explosives, discuss prolonged confinement with your Atlas representative. You can benefit by his ideas and experience. And get "Better Blasting"—Atlas' informative newsletter on latest methods and materials. Write us to put your name on our mailing list today.

EXPLOSIVES DEPARTMENT
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

on political vagary. In closing, the speaker commended the association's Public Relations committee for a job well done in community relationships.

Community Relationships E. K. Davison (J. K. Davison & Bro.) presented a paper entitled—*Good Community Relationships for the Sand and Gravel Industry*—which was a direct outgrowth of the establishment last year of the association's Committee on Public Relations. This committee, headed by Mr. Davison, has come to the belief that the following matters properly fall in the area of the industry's contact with the general public: zoning regulations, land use and rehabilitation; stream and air pollution; use of the public highways; and support of philanthropic and cultural public projects.

Zoning, land use, and rehabilitation problems have been sufficient to occupy the committee's full attention, and it is expected that the work of the committee will be largely directed toward the same issues in 1956. As the first step in outlining the present and potential impact of land use regulations on the industry, a questionnaire was circulated to the entire membership of the association. About 50 percent of the membership, or 122 companies, returned completed forms covering 198 plants operating in 39 states and the Province of Ontario, Canada.

Significantly, 50 percent of the plants replying are located in areas which are subject to zoning regulations. Sixty-one percent of reporting plants operate in rural areas—35 percent of which are zoned; 27 percent of the plants reported operation in suburban areas—67 percent being zoned; and of the 12 percent of replying plants operating in urban areas, 83 percent are on zoned tracts. While the proportion of zoned plants in urban and suburban areas may not be surprising, the high percentage of operations in rural areas that have been zoned is apparently indicative of a trend which will grow as suburbs continue to expand away from metropolitan areas.

A warning to producers against the danger of complacently relying on the doctrine of "non-conforming use" was quoted from a paper previously presented by Edward Hole (American Aggregates Corp.), who has had considerable experience with zoning problems. In this paper the author stated that this doctrine of non-conforming uses is being openly and forcibly challenged.

Mr. Davison stated that it was gratifying to be able to report that, as indicated on his committee survey, the 65 percent of the plants reporting on present or projected restoration programs appear to be under no legal compulsion toward such effort. Also of interest in some of the replies received to the committee's questionnaire were the indications of additional problems for consideration by the industry. By home state these replies included the following:

Alabama—The only complaints which may develop into regulations or restrictive action concern the "spillage of gravel on the city streets from our customers' trucks."

Washington—"The city (Seattle) grants us an annual permit to mine sand and gravel under performance bond for safety and rehabilitation."

New York—"Our industries are now threatened with legislation known as the 'Town Law' and sponsored by the New York State Association of Towns. This law, if enacted would give some 900 towns the right to impose restrictions, each in their own way, on our industry." Concerning highway hauling, it was added, "The chief difficulty seems to be in spillage of material resulting in damage to on-coming traffic."

Illinois—In attempting to meet city officials on an equitable basis, an operator effected a compromise which consisted of creating "a buffer strip 230 ft. wide along the highway and planting evergreens along this side of the area as well as along certain other property boundaries. 850 such trees were planted at a cost of about $8 each. Supplementing these were rows of seedlings. The whole operation cost us perhaps $10,000."

Nebraska—"We adopted the policy as far back as 1926 of selling our excavated property to either the state of Nebraska or private individuals for development as recreational area."

Colorado—"We have promised to reclaim land in this operation by leaving causeways with lakes between, by gently sloping all banks and planting trees, shrubs, etc., so that land will be suitable as building sites when the operation closes. Prior to that time when we submitted this proposal to the zoning board, we had been denied permission to open this operation."

Wisconsin—"Local town board has indicated more favorable tax consideration based on our intentions of rehabilitating our worked-out deposit." This comment points to a situation that may be fairly frequent—the fear of local taxing bodies that the working of a mineral property is gradually removing property from their assessment base.

Mr. Davison continued his remarks on conservation and restoration in referring to the program carried out by the American Aggregates Corporation at its several operations. (A full description of that company's efforts was presented in PIT AND QUARRY, October, 1955.) In replying to the association committee's questionnaire, American Aggregates officials also pointed out the problems of highway spillage by stating, "Due to bouncing pebbles, we insist that all loads are trimmed and loose material is cleaned off after the trucks are loaded. This takes only a minute or two and eliminates the source of another serious objection."

In concluding, Mr. Davison summarized the efforts of the committee to date as having achieved the first step—that of getting a perspective on the problem. The committee now plans to pursue a study of means of disseminating factual, reliable information on the importance of the industry to the economy of the nation, and to work up some suggested zoning codes which will recognize both the responsibility and the equitable rights of sand and gravel operators. It was stated that there would be an attempt to provide the membership with the best information available, but that the proper application of that information must be left to the individual operator to work out with his neighbors: further, that the individual operator must make up his own mind that he has an obligation to treat land and water with a sense of stewardship.

Regional Associations The annual meeting of the state and area association officials was the initial public business meeting of the association. The first speaker, R. E. Hutchins, secretary, Mid-West Ready Mixed Concrete Association, Chicago, Ill., described short courses in ready-mixed concrete which have been held under the auspices of various state and area associations.

Paul R. Smith, executive secretary of the Empire State Sand, Gravel and Ready Mix Association, Buffalo, N.Y., said that this association had been functioning for the last 4½ years and that its primary work has seemed to be to help legislators in the formation of legislation benefitting their state and local economy. This naturally affords a wonderful opportunity for the members of these industries to assist the legislator in appraising the merits of various

measures of interest to these industries and fortify him against the uninformed.

Mr. Smith cited several bills which had been introduced in the last few years, as examples of how undesirable legislation can be reframed before it causes trouble for producers. He felt confident, he said, that the joint endeavors will develop a favorable atmosphere and relationship among producers of materials, legislators, and local communities. Criticism divorced from honest and constructive purposes does not serve the objective of securing desirable legislation. Industries thus co-operating minimize the pressure group stigma which is so often associated with the activities of industry associations.

Claude L. Clark, secretary, Ohio Sand and Gravel Association and Ohio Ready Mixed Concrete Association, presented a paper on *Services to Our Members*. He said that he felt that one of the real reasons for local or regional associations is the opportunity they afford competitors to sit down and have a personal discussion of business conditions and operating problems. Across-the-table discussions can bring into harmony many seemingly divergent opinions.

Mr. Clark felt that producers go to conventions for many reasons—to learn about what is going on in the industry, regionally and nationally; to learn about what the prospects are for the future; to discover how others have solved production, or merchandising, or transportation, or any other problems; to see what the national association is doing to benefit the industry in the way of promotion, research, unfair competitive practices; and to study many other industry-wide programs. The producer's attendance at a national convention and his visits to the exhibits are his apprenticeship in tomorrow's operation.

Legislative effort continues to be the major activity of service to the members of his association, Mr. Clark said. He described several of these and of other types of which have been rendered members since the formation of the two associations over 21 years ago.

E. R. Booker, executive secretary, Rock, Sand and Gravel Producers Association of Northern California and Northern California Ready Mixed Concrete and Materials Association, spoke on the subject of collective bargaining on an area association basis. Mr. Booker said that labor unions are constantly striving to equalize rates and conditions within larger and larger areas, and that because of the type of operation the ready-mixed concrete industry has more trouble in such negotiations than the sand and gravel interests.

He described his functions in serving on the committees which carry on deals with the unions in northern California, emphasizing that labor costs are the most important element of costs which producers must face, and that spokesmen must be given a free hand to arrive at a settlement as equitable as possible. It is highly essential, he said, that the overall relationships between employers and unions be such that both parties really do "bury the hatchet" between negotiations, and attempt to live with the agreements in peace and harmony and without undue bickering over technicalities.

H. J. Stockhard Jr., executive secretary, Carolinas Ready Mixed Concrete Association, told the meeting of activities of state and area associations producing insurance savings for members. The industry, he said, has not had a separate classification established by the National Council on Compensation Insurance. Action was initiated last year which might lead to the establishment of such classification in North Carolina; and it is hoped that, if the move is successful, it might be put into effect throughout the country for a radical reduction in rates.

Part time management services is the second way in which a saving might be effected by associations. Although any savings realized by such an arrangement will not be enjoyed by individual members, unless dues can be lowered because of the result, it can result in a substantial saving to the association itself. Mr. Stockhard cited several instances where such division of duties has proved worthwhile.

OPERATING PROBLEMS AND EXPLORATION

Classifying Sand A paper entitled *Classifying Sand with Water* presented by E. L. Shoemaker (Warner Co.) dealt with the growing problem facing many producers in meeting fine aggregate specifications. Despite the fact that sand is a comparatively low-priced commodity and is often sold much as it is found in its natural state or with the minimum of preparation, it was said that there is a growing trend toward tightening of specifications without a commensurate willingness on the part of the construction industry to pay a premium price for the special preparation required by such restrictions.

It was stated that in order to assure the availability of supply, sand specifications have included a degree of tolerance. Among several types of specifications, the following were pointed out (in increasing order of severity): sieve analysis requirements; sieve analysis along with a requirement that the fineness modulus vary no more than a given tolerance above and below an optional value; sieve analysis and a further requirement that the fineness modulus vary no more than a given tolerance above or below a specified value. Under the latter type, it was stated, compliance becomes extremely difficult; and unless a natural deposit is available which exactly fulfills the requirements, costly and frequently wasteful (of material) preparation is necessary.

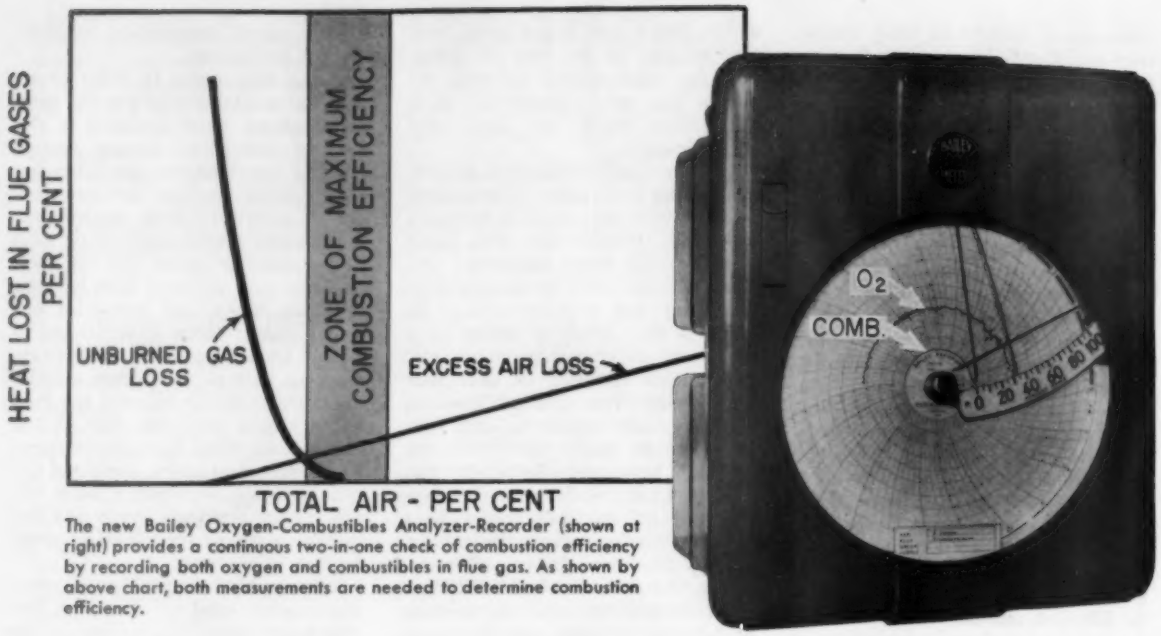
In describing the problem of meeting concrete sand specifications, Mr. Shoemaker mentioned features of his company's deposit which are often encountered by other operators—namely, excessive fines and sudden fluctuations in fineness modulus. He pointed out that selective digging cannot be relied upon exclusively, and therefore his company has devoted considerable study toward establishing, most economically, facilities which would break down the sand into five or six fractions—these to be re-blended from separate storage piles over a reclaiming conveyor. It was proposed that the coarse fractions, down to ⅛-in. for example, would be separated by screening, while the finer sizes would be established by adding another set of four hydraulic-classifying screws to the four now in use.

Tricks of The Trade In an open forum discussion of operating problems which was based on replies to a questionnaire distributed to the association membership, several developments and experimental efforts toward solution of certain operating problems were described. These included the use of various hard-surfacing welding rods, causes and cures of screen blinding, cleaning of conveyor belts, and segregation of fines in stockpiles.

W. E. Hole Jr. (American Aggregates Corp.) reported on the research being done in the various plants of the company with respect to establishing the most effective surfacing rod for each particular application.

On the matter of screen blinding,

(*Continued on page* 154.)



The new Bailey Oxygen-Combustibles Analyzer-Recorder (shown at right) provides a continuous two-in-one check of combustion efficiency by recording both oxygen and combustibles in flue gas. As shown by above chart, both measurements are needed to determine combustion efficiency.

BAILEY announces . . .
New 2 in 1 way to measure Combustion Efficiency

The new Bailey Oxygen-Combustibles Analyzer-Recorder gives you a continuing double check on combustion economy. It's fast response measures and records:

1. Excess air—regardless of the fuel or combinations of fuels being burned.

2. The mixing efficiency of your fuel-burning equipment—by indicating the amount of combustibles in your flue gas, resulting from incomplete mixing of fuel and air.

Combustion efficiency depends upon fuel-air ratio. Too much fuel can be even more costly than too much air. And because of the interdependence of these two factors, no control that measures only one of them can give you complete protection.

Now, for the first time, you can check *both* with a *single* fast acting instrument, using the new Bailey Oxygen-Combustibles Analyzer-Recorder for industrial furnaces, kilns, heaters and boilers.

Fuel economy improves as excess air is reduced —until unburned fuel begins to show up in the flue gas. When this happens, combustion efficiency drops off sharply if there are further decreases in the air-fuel ratio. That's why combustion gases must be analyzed for *both* oxygen and combustibles to get a true indication of efficiency—and that is why Bailey coordinates both measurements on the same chart, to show when excess air may be reduced safely without danger of greater losses from unburned gases.

The Bailey Oxygen-Combustibles Analyzer is an approved combustion safeguard.

Ask your local Bailey engineer for suggestions on application. Equipment details in Product Specifications E65-1 and E12-5. P31-1

BAILEY METER COMPANY

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

INSTRUMENTS AND CONTROLS

For Power And Process

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

DOUBLE ROLL CRUSHERS for finer reduction of medium-size feeds are covered in a new 8-page bulletin issued by the *McLanahan and Stone Corporation*. In addition to descriptive data, the bulletin features dimensional drawings, a table indicating sizes for basic components of the 25 crushers detailed, a parts list, specifications, and a formula with accompanying tables for determining crusher capacity for various roll setting and size combinations. (1)

RELIANCE GEARMOTORS incorporating new NEMA motors and completely redesigned gearheads are available for the first time from *Reliance Electric & Engineering Company*. "Reduce Speed," a bulletin describing the new line, includes sections on maintenance, construction and design, types of gearmotors, types of service, output speeds, horsepower, electrical characteristics, enclosures, and types of mountings. (2)

MODERN MULTIPLE V-BELT drives, their origin, development, and history, are discussed in a pocket-size booklet released by *Allis-Chalmers Manufacturing Company*. The booklet also covers engineering standards and modifications in V-belt drives. There are also answers to typical questions, tables, photographs, and sketches. (3)

CENTRIFUGAL PUMPS and valves of various sizes and types are described completely in *McNally Pittsburgh Manufacturing Corporation's* most recent bulletin. Photographs, dimension drawings, data tables, and performance curves illustrate the technical information presented. (4)

IRD MODEL 1064 variable filter is a new instrument made by *International Research & Development Corporation*. The Model 1064, used in combination with IRD Vibration Analyzers, spots chatter in grinders, eccentricity in turning and boring operations, bearing failures in high-speed machinery, mechanical troubles in turbines and generators, and locates the causes of incipient failures in all types of rotating machinery. (5)

HYPALON chemical rubber, a discovery of *E. I. du Pont de Nemours & Company*, is adaptable for use in the manufacture of hose, seals, linings, protective coatings, gaskets, and many other rubber products. Hypalon is said to be durable and versatile, and resistant to weather, heat, ozone, and chemicals (6)

PRIMALEEN, an all-purpose lubricant, is now nationally available. Manufactured by *Protecto Lube Company*, this lubricant is described as resistant to water, steam, detergents, chemical vapors, and temperature changes. Primaleen is said to be economical and to require less frequent application than ordinary greases. (7)

NATIONAL IRON COMPANY'S Rockover Skip Systems are designed to provide inexpensive movement of bulk materials from the bottom of open pits to surface. The head frame structure is located on the surface and can be a simple unloading structure, or it can provide crushing, screening, feeding, or concentrating equipment. Skip run can be lengthened by adding track and moving the Skip loading point to follow the mining or quarrying operations to deeper levels. (8)

TRACTORS, attachments, and other industrial equipment are discussed in a booklet issued by *John Deere Industrial Tractors and Equipment*. Specification tables and photos of the equipment in its various applications supplement the descriptive data in presenting this new line of Deere machinery. (9)

HYDRAULICALLY powered drills, adaptable for P.T.O. mounting on all types of trucks or tractors, will be made available this spring by *Mobile Drilling, Incorporated*. This new drill, the Model B-40, allows a 60° range of angle drilling, and will core to depths of more than 200 ft. (10)

ROTARY AIRLOCK feeders manufactured by the *Prater Pulverizer Company* are featured in a comprehensive catalog offered by this company. Prater airlocks come in three sizes and types, with seven different models and 16 different rotor combinations. All parts are completely interchangeable. Descriptions of each model, specifications, and dimensional drawings are presented in this catalog. (11)

PRE-BILT sectional belt conveyors in standardized, pre-engineered units with capacities ranging up to 1,500 tons per hour are described in a new *Link-Belt Company* booklet. The new conveyors incorporate standard Link-Belt components, including the new Series 50 idlers. Drives range up to 40 hp. (12)

A NEW FEEDER for heavy-duty quarrying and mining operations is now available from *Universal Engineering Corporation*. Called the "Wobbler," this machine performs feeding and scalping functions in one operation. "Wobbler" action, a

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(Sec. 34.9 P. L. & R.)
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APRIL, 1956

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In addition I would like information on:

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

rocking, tumbling motion, separates fines from oversize. Universal attributes these features to the "Wobbler": self-cleaning, self-lubricating, no vibration or noise, and capacities up to 2,500 tons per hour. (13)

TERRATRAC'S complete line for 1956 is presented in a new 12-page booklet available for distribution by the *American Tractor Corporation*. Five new gasoline and three diesel-powered tractors are featured, plus a complete selection of matching loaders, dozers, backhoes, and other related equipment. Statistics on construction volume are included. (14)

HOW TO GET MORE RESULTS from 10 percent less power costs is explained by *Ratsonics Corporation* in their catalog which is being offered free to all those interested in cutting wastes in the generation, transmission, and application of all power services. (15)

THE 1956 RUST-OLEUM catalog, a 28-page treatise on rust prevention, is available from the *Rust-Oleum Corporation*, manufacturers of rust preventive products. Illustrations show the uses and applications of Rust-Oleum throughout industry. 102 color chips show the colors available in each type of coating and typical questions and answers are included. (16)

AN 80-PAGE CATALOG illustrating and describing 54 types of wire rope slings and their fittings has just been released by the *Wire Rope Corporation of America, Inc.* The catalog reviews the many different types of slings and fittings recommended for specific applications. Capacity tables are provided for slings as well as fittiags. Copies are available from the Wire Rope Corp. of America. (17)

MANGANESE STEEL SPROCKETS manufactured by *Taylor-Wharton Division, Harrisburg Steel Corporation*, are featured in a descriptive brochure just released. The brochure points out the advantages of using TISCO sprockets with replaceable tooth segments. The use of self-hardening manganese steel is claimed to increase sprocket life up to 500 percent over cast-iron types. (18)

APRIL, 1956

Please send more information on circled items described in this issue

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ENGINEERED KILOWATTS is the title of the manual being offered by *International Fermont Machinery Company, Inc.* Electric plants powered by internal combustion engines and designed for automatic or push-button control are discussed. Reference material, selection factors, typical specification, and data on installation and automatic starting controls available. (19)

LIQUID DUST CONTROL systems are discussed in two pamphlets offered by *The Johnson-March Corporation*, dust control engineers. Compound M, the topic of one pamphlet, when added to water, is effective in controlling dust arising from crushing, screening, conveying, loading, dumping, and storing. The second pamphlet presents flow diagrams, air engineering data, and operating principles of the liquid precipitator scrubber, a unit which, through multiple-action scrubbing, is said to average 97 percent efficiency. (20)

AMPCO METALS, INC., manufacturers of Bronze Weldrode Products, offers for distribution Bulletin W-17 which features their line of bronze electrodes, filler rod, and wire. Description and applications, procedures, welding techniques and processes, and an Ampco electrode weldability chart are included in addition to photographs. (21)

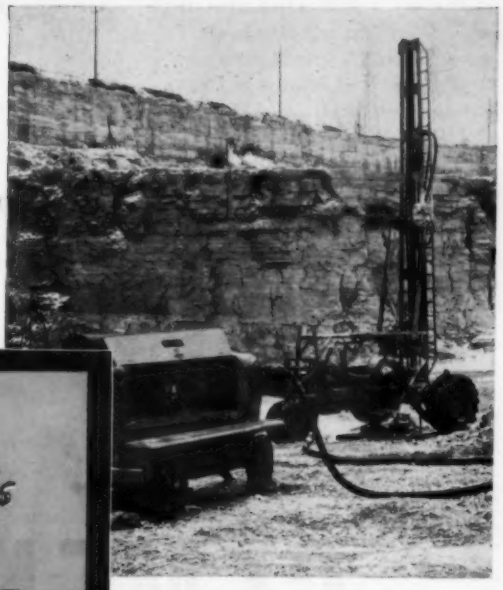
A NEW LINE OF WISSCO-LOY Space Screens is now available from the *Wickwire Spencer Steel Division* of *The Colorado Fuel and Iron Corporation*. Specially fabricated in hundreds of specifications to fit any specialized screening needs, Wisscoloy Space Screens are said to be accurate and economical. An illustrated bulletin from Wickwire includes specifications and applications of the new line. (22)

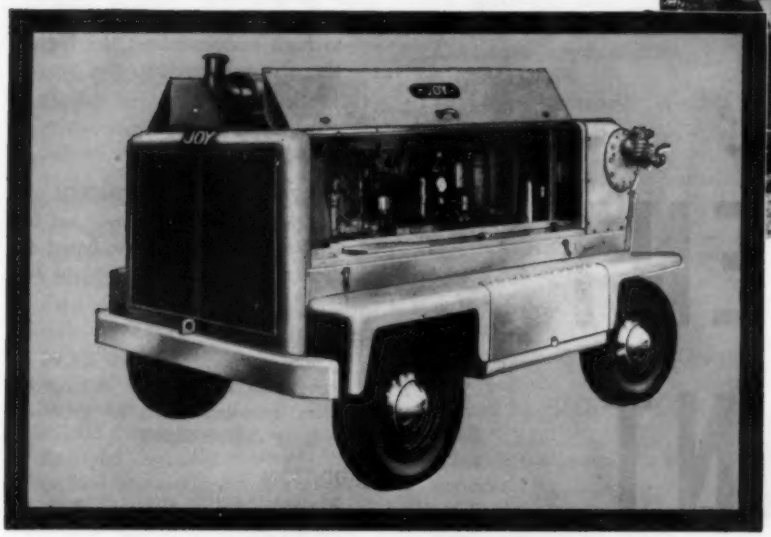
A PRICE LIST including application data and welding instructions is offered by *Ford Steel Company*, manufacturers of manganese nickel steel products. Items on the price list are: mangaloy welding electrodes, manganese bars, wedges, and rolled plate, and hard facing electrodes. (23)

CONVERTO HOISTS and bodies are discussed in detail in the latest catalog released by the *Converto Manufacturing Company*. Specification tables, hoist rating charts, and a table of weights and measures are part of the informative material this catalog presents. (24)

THE CLEVELAND SPEED VARIATOR, a compact unit for driving machine tools and other production equipment, is said to provide variable output speed over a range up to 9:1. In addition, the *Cleveland Worm and Gear Company* states that their speed variator is economical, provides infinite variation, and responds rapidly to speed change. The worm drive for controlling speed adjustment can be operated through manual or automatic, direct or remote control. (25)

Not only NEW but DIFFERENT





Joy R.P-600 Airvane Rotary Portable Compressor furnishing air for a Joy Challenger Drill in an Illinois quarry.

JOY AIRVANE ROTARY COMPRESSOR

Joy engineers started with all accumulated rotary information—then went on from there to produce, we believe, the best rotary compressor available today. These Joy developments contribute materially to a superior machine:

THERMAL BY-PASS Heats oil quickly, keeps it flowing into compressor at correct temperature—*under all weather conditions.* Efficient oil circulation system provides immediate lubrication (no dry starts).

SPLINE COUPLING Does away with a clutch, gives greater power-transmission efficiency. It's light, takes little space, is virtually indestructible.

TWO-STAGE FILTER-SEPARATOR Removes oil from air and returns it to circulation system so efficiently that oil consumption becomes a minor item.

ECONO-MISER load control automatically selects most efficient engine speed, maintains steady pressure, saves fuel, increases compressor life.

SHORTEST TURNING RADIUS Compact design and low center of gravity give the shortest turning radius of all rotaries. With light weight, this spells *maneuverability.*

OTHER FEATURES (often overlooked) Body is waterproof —tool box and fuel tanks can be locked—doors stay open without props—three lifting rings support entire machine —push-button uses ether-capsule for cold weather starting.

Write for complete information to **Joy Manufacturing Company** Oliver Bldg., Pittsburgh 22, Pa. In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Write for FREE Bulletin 69-26

Consult a Joy Engineer

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PORTABLE HOISTS • FANS • BLOWERS • TUNNEL,
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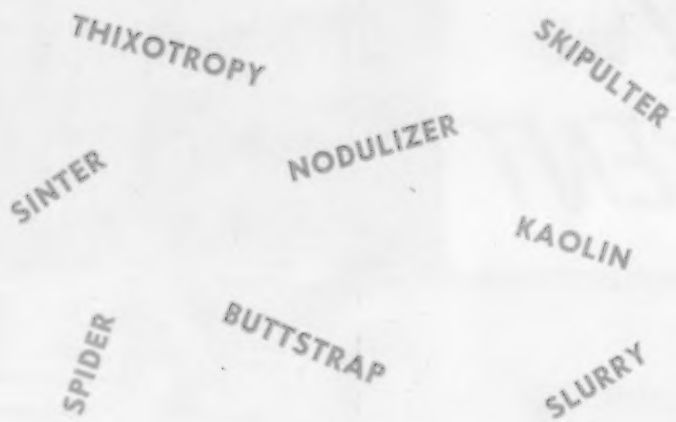
FOR OVER HALF A CENTURY



CEMENT PLANT GLOSSARY

Compiled by

C. F. CLAUSEN* and W. R. DERSNAH**

During their visits to nearly all the cement plants in the United States and Canada, the authors have frequently observed colloquialisms and widely differing usage of technical and operational terms in the field of cement manufacture. It is their hope that this glossary of words specific to cement making may be helpful in standardizing the terminology for the benefit of writers, secretaries, readers, speakers, and audiences, and that it will be useful to students and new employees in cement plants.

*Director, Manufacturing Process Dept.
**Manufacturing Process Engineer
} Portland Cement Association, Chicago

A

ABRASION-RESISTANT REFRACTORY
Hard-fired, dense, high-duty fireclay bricks (alumina-silica, containing less than 50 percent alumina) which resist physical wear or abrasion.

ACID REFRACTORY
High-silica and alumina-silica refractories. Alumina-silica materials vary in refractoriness or resistance to high temperatures; the higher the alumina content, the greater the refractoriness.

A.C.I. (trade name)
(see LEPOL KILN)

ACOUSTIC MILL FEED CONTROL
An electronic instrument used for control of mill feed rate based on changes in the noise level of the mill.

ADDITIVE
A material added to the slurry or raw materials, either during or after grinding, such as grinding aids or deflocculants.

ADDITION
Material, other than gypsum or water, which is interground with clinker, in amounts not to exceed 2 percent. Includes grinding aids and air-entraining agents.

AGITATION
The mixing and homogenization of slurries or finely ground powders by air or mechanical means.

AGITATOR
A rake or paddle, often with jets for compressed air, to mix or maintain suspensions in slurries.

AIR-COOLED JACKET
Jacket around a burner pipe, open at both ends, to allow cool outside air to be drawn along the outside of the burner tip by the fuel or air-fuel mixture as it leaves the tip.

AIR DEFICIENCY
The lack of sufficient oxygen to allow complete combustion of the fuel in the kiln. Results in combustibles in the waste gases.

AIR-ENTRAINING CEMENT
Cement into which has been interground a small amount of an air-entraining agent such as certain

rosins, resins, or fatty acids. During the mixing of concrete or mortar, the use of air-entraining cement produces air-entrained concrete or mortar.

AIR LIFT

Elevating equipment whereby slurry or dry powder is conveyed upwards through pipes by means of compressed air.

AIR PERMEABILITY TEST

A measurement of the fineness of portland cement or any finely divided powder; expressed as surface area in square centimeters per gram.

AIR-QUENCHING COOLER

Cooler in which the hot clinker passes over grates with cold air forced up through the load for rapid cooling.

AIR SEPARATOR

An upright cylindrical-conical apparatus, with internal rotating blades, which separates various sized fractions of ground materials by centrifugal force. Fine particles are discharged as product, oversize is returned to the mill as tailings.

AIRSLIDE (trade name)

Enclosed conveyor in which finely ground materials are transported by gravity over a slightly inclined porous fabric. Air supplied below the fabric keeps the powdered material fluid.

AIR-SWEPT MILL

A ball or tube mill in which the finely ground particles are removed by a stream of air passing through the mill.

ALKALI

A substance having marked basic properties — generally sodium or potassium oxides or hydroxides.

ALUMINA

Aluminum oxide—Al_2O_3.

ALUMINA REFRACTORY

Brick composed essentially of alumina and silica, with the alumina in proportions ranging between 40 and 70 percent.

ANGLE OF REPOSE

The angle between the horizontal and the natural slope of loose material (such as cement), below which the material will not slide.

ANHYDRITE

Anhydrous calcium sulphate—$CaSO_4$. Gypsum from which the water of crystallization has been removed, usually by heating above 325 deg. F. Natural anhydrite is less reactive than that obtained at 325 deg. F.

ANION

A negative ion; a negatively charged atom or group of atoms. It is attracted to the anode during electrolysis.

ANTHRACITE

A hard, natural coal which contains approximately 85-95 percent carbon and a low percentage of volatile matter.

APRON FEEDER

(see PAN FEEDER)

ARENACEOUS

Composed largely of sand.

ARGILLACEOUS

Composed primarily of clay or shale.

ASH

The inorganic residue remaining after the combustion of a fuel.

ASH RING

Kiln ring near the discharge end promoted by the fallout of ash particles on the load.

ATTRITION

(1) Wear and tear. (2) Grinding in which size reduction is accomplished by rubbing or friction.

AUGER

A boring tool, particularly for drilling rock.

AUTOCLAVE

High-temperature, steam pressure container for laboratory testing of volume stability of concrete, neat cement or mortar specimens.

AUXILIARY KILN DRIVE

Stationary reserve engine, usually diesel or gasoline, to be connected to kiln drive in case of power failure.

B

BACKSPILL

The material which spills out of the back end of the kiln when the flow of slurry is obstructed by chains or mud rings.

BAG TYPE DUST COLLECTOR

Collectors in which dust is trapped when dust-laden air is passed through porous bags.

BALL COATING

Reconsolidation of finely ground, dry material on the surface of the grinding media which inhibits further comminution.

BALL MILL

Horizontal, cylindrical, rotating mill charged with large grinding balls and having a diameter equal to or greater than the length.

BALL-AND-RACE MILL

Vertical grinding mill for dry raw materials, coal or clinker. The material is ground by steel balls (8 in. to 12 in. diameter) rotating horizontally in a race.

BARREL

(1) Unit of measure for portland cement corresponding to 4 sacks of 94 lb. each. One American barrel of cement weighs 376 lb. net (Canadian 350). (2) Wood or metal container formerly used for export of cement.

BASIC REFRACTORY

Kiln lining made from magnesite or chrome ore. These bricks exhibit greater refractoriness and better resistance to chemical attack of slags and metallic oxides than the alumina or silica types.

BATHTUB ZONE

That zone of a kiln (the calcining or burning section) which is of greater diameter than the remainder of the kiln.

BAUXITE

Raw material composed primarily of $Al_2O_3 \cdot 2H_2O$ together with considerable quantities of SiO_2 and Fe_2O_3.

BELT CONVEYOR

Conveyor by which dry materials are transported on a continuous flat or slightly curved belt of rubber and/or fabric traveling over rollers.

BENEFICIATION

Improvement of the chemical or physical properties of a raw material or intermediate product by the removal of undesirable components or impurities.

BIN-DICATOR (trade name)

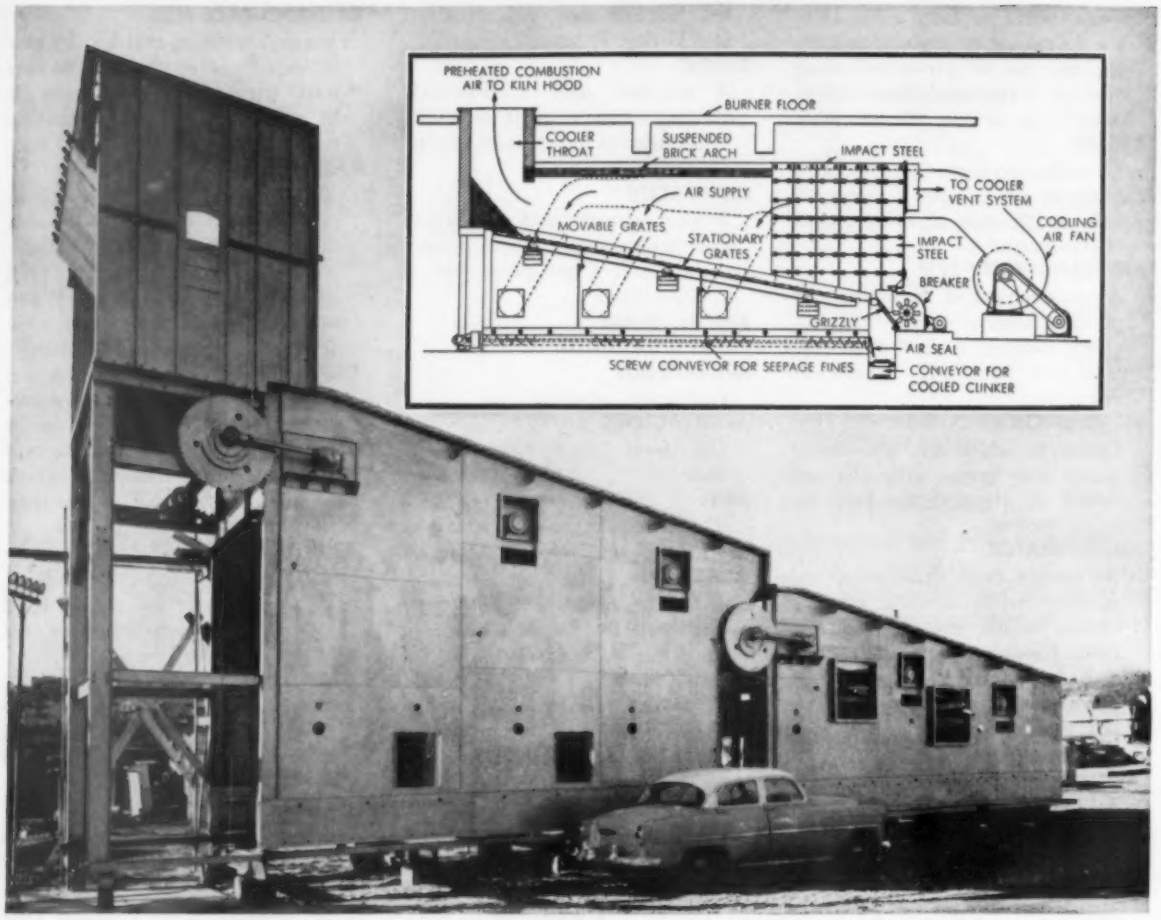
A bin level indicator which may be installed at various points in bins, silos, hoppers, chutes and conveyor boxes. Each unit is equipped with a diaphragm and counter weight suited to the material in the bin.

BIN SYSTEM
(Coal grinding and firing)

Arrangement incorporating a system of bins for pulverized coal from which it is fed to the stream of primary air and carried into the kiln. Not used with DIRECT FIRING (cf.).

BITUMINOUS COAL

Soft coal which contains 50 to 80 percent carbon and which when heated yields considerable volatile matter.



BIGGER and BETTER . . .

and, MORE and MORE of them!

Fuller Coolers are spreading out, both in size and in various industrial applications. Above is one of two coolers, assembled at our Catasauqua plant, sold to a large chemical company for cooling of phosphate nodules discharged from a rotary kiln. Temperature of the nodules is reduced from 2400-deg.F. to 250-deg.F., at rate of 1500 tons a day. The cooler has a grate surface 10 feet wide by 60 feet long, the largest ever built by Fuller.

These king-size coolers will be equipped with automatic controls for variable grate speeds, supplying uniformly preheated air at 1300 to 1350-deg.F. for combustion in gas-fired rotary kilns, resulting in a substantial saving of fuel. Each cooler installed, with its refractory lining, will weigh in the neighborhood of 250 tons.

Well over 100 Fuller Coolers have been sold to the chemical process industry during 1955 . . . truly an unqualified endorsement of the efficient performance of this equipment.

In addition to phosphate nodules, Fuller coolers are today handling materials such as pebble lime, dolomite, iron nodules and Portland cement clinker, with the characteristic Fuller efficiency that is the result of long experience and knowledge of industry needs.

Possibly you have a cooling problem which could be solved with a Fuller Cooler. Why not get in touch with a Fuller engineer, who will be glad to discuss the matter with you in detail. Bulletin CO-5 gives full details of this equipment. Write for a copy today.

Fuller
. . . designers and builders of better equipment . . . always

FULLER COMPANY — GENERAL AMERICAN — TRADE MARK

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100 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORP.
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CO-31
3292

Let's Listen in

ON A LONG-DISTANCE

TELEPHONE CALL

Thomas Foundries' Engineer: "Hello, Mr. Sand and Gravel, you have now been operating your small Thomas DURABLE Dredge Pump for several months. How is it performing?"

Mr. Sand and Gravel: "Well, it seems to be doing a good job. We have no complaints."

TFE: "Are the running parts showing much wear?"

Mr. S & G: Oh, it must be all right. Production is OK. But I haven't looked inside!"

TFE: What! A sand and gravel pump under your operating conditions should be inspected regularly."

Mr. S & G: "Well, you told me that your pump would last longer, that it is made of improved materials. That's the reason I bought it."

TFE: "Yes, that's true. But any sand and gravel pump should be regularly inspected. What about production?"

Mr. S & G: "It's OK but I seem to be having a h - - of a time getting four cars of pea gravel per day."

TFE: "How is that? That's not so good."

Mr. S & G: "No, maybe not, but I couldn't get but three cars of pea gravel a day before I installed your pump. Come by and see me. I will give you details and show you what we are doing. Goodby."

This is almost a verbatum report of an actual conversation. The name and location of this experienced, long-established sand and gravel producer will be given on request.

Time marches on. Now, three years later, Mr. S & G has installed two more Thomas Pumps—one replacing a Cast Iron Pump and the other a Manganese Pump. He is now happy with three efficient, long-lived, low-cost Thomas Pumps. They are made of that extremely hard metal—genuine, abrasion-resistant Thomas Ni-Hard.

YOU CAN'T BUY AT ANY PRICE A MORE DURABLE PUMP THAN A "THOMAS" FOR SAND AND GRAVEL—YOU CAN'T BUY ONE THAT WILL MAKE YOU AS MUCH MONEY.

THOMAS FOUNDRIES, *Inc.*

P. O. BOX 1111 . . . . BIRMINGHAM, ALABAMA

BLAINE APPARATUS
Air permeability apparatus for measuring the surface area of a finely ground cement, raw material, or other product.

BLASTING
Removing rock from a quarry wall by means of explosives. Explosives are deposited in holes drilled in the rock and spaced to produce fragmentation.

BLEEDING
The accumulation of water on the surface of a mortar or concrete caused by the settlement of the solid materials within the mass.

BLENDING
Combining the contents of two or more bins, tanks or silos of raw materials or cement to adjust the analysis of the final product.

BLENDING BIN
A bin into which the contents of two or more bins are pumped for blending.

BLINDING
The filling or plugging of the openings in a screen by the material being separated.

BLOCK CAVING
A method of mining material from the top down in thick successive layers or blocks. Each block is undercut over the greater part of its bottom area and the supporting pillars blasted out. As the block caves and settles, the cover over the block follows. The valuable material is removed through crosscuts and shafts.

BLOWER
Equipment composed of a fan in a housing with ducts for imparting motion to stationary air.

BOWL CLASSIFIER
Equipment for separating coarse and fine particles in cement raw material slurry, ground with surplus water.

BOWL MILL
Vertical grinding mill in which materials are ground between centrally suspended rollers and a revolving annular ring.

BOX TIRE (see TIRE)

BREAKER PLATE
Heavy, wear resistant liners for JAW CRUSHERS or ROLL CRUSHERS.

BRIDGE CRANE
A crane which travels on widely separated rails, usually above a storage area.

BRIQUETTE
A molded specimen of mortar with enlarged extremities and a center cross-section of one square inch to be used for measurement of tensile strength.

BRITISH THERMAL UNIT (BTU)
The amount of heat required to raise the temperature of one pound of water 1 deg. F. at or near its point of maximum density.

BULK LOADING
Loading of unbagged cement in containers, specially designed trucks, or railroad cars.

BURN, BURNING
(1) Combustion of fuel. (2) Sintering or near-fusion in a kiln, resulting in chemical combination of the raw materials and formation of clinker.

BURNABILITY
The ability of raw materials to react chemically on heating. Softer and more finely ground and intimately mixed raw materials of the proper chemical content combine into cement clinker more readily. Relatively high contents of iron and alumina facilitate burning (through fluxing action), whereas silica has the opposite effect.

BURNER
The operator who controls the burning process of a cement kiln by making changes in fuel, feed rate, kiln speed, draft, etc., so as to produce a quality clinker at the highest possible rate, with minimum consumption of fuel and proper conservation of equipment.

BURNER GLASSES
Special glasses for viewing the burning operation in a kiln. Blue or green glasses containing cobalt or iron stop the passage of infrared rays.

BURNER PIPE
The pipe through which the fuel (coal, oil, or gas), and usually part of the combustion air, is blown into the kiln.

BURNER'S PLATFORM
The platform or floor at the lower end of the kiln on which are located controls, and where the burner regulates the operation.

BURNING ZONE
The zone near the discharge end of the kiln in which the dried and calcined raw materials are chemically converted to portland cement clinker at temperatures near 2800 deg. F.

BUSHY FLAME
(see TURBULENT FLAME)

BUTTSTRAP
Steel band for riveted joints in kilns or mills.

B. & W. MILL (trade name)
(see BALL AND RACE MILL)

C

CALCAREOUS
Composed primarily of calcium carbonate.

CALCINATOR
Machine for drying and pre-heating slurry through intimate contact with hot kiln exit gases, passing in counterflow through a vessel charged with heat-exchanging elements. Normally little if any calcination (liberation of CO_2) takes place.

CALCINING ZONE
That zone in the kiln where calcium carbonate is decomposed into CaO and CO_2 at temperatures near 1600 deg. F.

CALIBRATE
To determine and correct for error in the readings of a measuring device.

CALORIE
A unit of heat: (1) the amount of heat required to raise the temperature of one gram of water 1 deg. C. (2) in food and fuel values (heat consumption in kiln): the amount of heat required to raise the temperature of one kilogram of water 1 deg. C. (called a "large" calorie, being 1000 times the "small" calorie).

CALORIMETER
An instrument for measuring heat, such as the quantities of heat liberated by the combustion of a fuel. In cement laboratories a fuel is burned in a "bomb", suspended in a volume of water, and the heat given off during the combustion of the fuel is calculated from the resulting increase in the temperature of the water.

CAPACITY
(1) Rated—The maximum production predicted from the equipment dimensions, characteristics and performance. Annual rated capacity of kilns and entire plants usually determined as total production during best three continuous months, divided by the number of days, multiplied by

365. (2) Actual—The annual production attainable under normal operating conditions, usually about 90 percent of rated capacity.

CARBON
A chemical element forming a constituent of coal, petroleum, limestone and other carbonates.

CAR TIP
A hoisting mechanism used to raise one side or one end of a specially designed railroad car or truck, or its body, to dump the contents.

CASCADING
The rolling and falling motion of grinding balls in a mill, or of clinker in a kiln, as the equipment rotates. In mills, particularly, the movements of grinding media in a trajectory from a position near the top to the point of impact at the bottom.

CASTABLE REFRACTORY
Refractory material which is made into a paste or slurry and placed to form a monolithic lining.

CATION
A positive ion; a positively charged particle, atom or group of atoms. During electrolysis the cations travel towards the cathode or negatively charged electrode.

CEMENT COOLER
Equipment for cooling finished cement after grinding. May consist of water-jacketed screw conveyor with water-cooled impeller shaft and blades, or a vertical cylinder, with the outside cooled by running water and along the inner surface of which a thin layer of cement is moved by centrifugal action.

CEMENT PAINT
A combination of cement (usually white) and hydrated lime along with water repellents, pigments and accelerators, which may be mixed with water for application, usually to concrete surfaces.

CEMENT ROCK
Natural, impure limestone which contains the ingredients for cement in approximately the required proportions.

CENTRICLONE (trade name)
(see LIQUID—SOLID—CYCLONE)

CENTRIFUGAL PUMP
A pump in which a rotating impeller inside a housing gives motion to a fluid or suspension through centrifugal force. Used especially for slurry.

CENTRIFUGE
Equipment used to reduce the moisture content of a slurry or suspension by means of rotation, with resulting centrifugal force. Functions essentially as a THICKENER but with the force of gravity increased many times.

CHAIN BALANCE
A laboratory balance or scale in which small changes in weight on one side of the balance are achieved by lengthening or shortening a small chain attached to one balance arm.

CHAIN SYSTEM
A system of chains suspended in the feed end of a wet-process kiln to promote heat transfer to the slurry and evaporation of water.

CHALK
A soft limestone composed chiefly of the shells of small marine life.

CHECK POT
A tank used for checking the volume of slurry passing to the kiln.

CHERT
An impure, flintlike rock, consisting mainly of silica (SiO_2).

CHOKE
To make changes in a flame by reducing the velocity or percentage of primary air. A choke in a fuel pipe might be a constriction which would reduce the nozzle velocity of the air-fuel mixture and usually the flame length.

CHURN DRILL
Quarry drill for primary blast holes. Consists of a weight which is hoisted up and down in the drill hole and with an auger attached to its underside, so shaped that it makes a fraction of a turn every time it strikes the bottom.

CHUTE
An inclined trough down which fluids or solids may flow or slide to a lower level by gravity.

CIRCULATING LOAD
The proportion of separator tailings to new mill feed. Often stated in percent.

CLAMSHELL BUCKET
The bucket on a quarry shovel or storage crane which opens as a clamshell to pick up a load.

CLAY
An earthy, plastic material high in silica, alumina, and iron.

CLAY SLIP
A suspension of clay in water prepared for ease of handling and proportioning.

CLINKER
The fused product of a kiln which is ground to make cement.

CLINKER BREAKER
A series of hammers or rollers installed at the discharge end of a clinker cooler, to break lumps for more rapid cooling.

CLINKER-CEMENT BRICKS
Refractory bricks for rotary kilns made in cement plants from screened clinker, portland cement and very little water, tamped by hand or machinery, stocked, watered, and air-cured. No chemical reaction will take place in kilns between such bricks and the load.

CLINKER CONVEYOR
Any drag chain, bucket, belt, pan or vibrating conveyor used to move clinker from the burning department or storage.

CLINKER COOLER
Equipment used to cool clinker by motion or air. Includes drag chain, air-quenching, rotary, planetary, inclined grate, vibrating.

CLINKER CRUSHER
(1) (see CLINKER BREAKER). (2) Separate jaw or roll-crusher for clinker installed ahead of grinding mills.

CLINKER MILL
(see FINISH MILL)

CLINKER RING
A buildup in or near the back of the burning zone of a kiln in which melted or fused raw materials have adhered to the kiln lining in excessive amounts.

CLINKER STORAGE
The area (covered or exposed to the elements), or silos in a cement plant where clinker is stored or aged before grinding.

CLOSED CIRCUIT GRINDING
Grinding system in which the mill product is passed to a screen or separator so that fines may be removed from the circuit and oversize (tailings, sands) returned for further grinding.

COAL STORAGE
The storage area (often in the same building or location as clinker and raw material storage) where stocks of coal are maintained.

COATING
(see BALL COATING).

COLLOID
Any substance in a certain state of fine division in which the particles range in diameter from about 0.2 to about 0.005 micron.

Big production: at the Camp Dennison, Ohio, plant, a 2¼-yd. Michigan loads out a heaping bucket load of frozen aggregate. Power-shift transmission is standard equipment—cuts seconds off every cycle between truck and pile.

$76,000* buys *one* 2¼-yd. truck crane or *four* 2¼-yd. Michigan Tractor Shovels . . .

Here's why Ohio Gravel Co. bought the four Michigans

Ohio Gravel Company operates five plants around the perimeter of Cincinnati. Until a short time ago, ½-yd. and ¾-yd. clamshells and shovels handled all loading from stockpiles. When it became apparent that the Miami plant (300 t.p.h. capacity) did not have adequate loading capacity, Ohio Gravel asked for bids on a special 2¼-yd. mobile crane. According to Walter Flach, V. P. Production, they recognized the need for bigger bucket capacity and better mobility between stockpiles. Bids on the crane ran from $65,000 to $76,000—a substantial price to pay for increased capacity in *only one of the five plants.*

Had to leave the demonstrator

At this point Bode-Finn Co., the local Michigan distributor, got permission to demonstrate a 2¼-yd. Michigan Tractor Shovel at the Miami plant. The "demonstration" lasted two weeks—that is, Ralph Hautman (Miami superintendent) wouldn't

*Current list price F.O.B. factory for four 2¼-yd. diesel Michigan Tractor Shovels.

let them take the demonstrator away until a permanent machine was delivered. Before the new Michigan even arrived, Ohio Gravel Company bought three more for other plants. *The total cost of the four Michigans was approximately the same as the one crane.*

Loads as much as two cranes

At the four plants with Michigans, the superintendents agree that one Michigan loads trucks as fast or faster than two ¾-yd. clamshells. With widely separated stockpiles, the Michigans move around the yards as fast as the incoming trucks—27 mph top speed. They consistently get heaping bucket-loads. Power-shifted cycles between pile and truck average about 40 seconds; it takes 4 minutes or 6 bucket-loads to put 19 tons into a dump trailer (see picture).

A typical heaping bucket-load of graded bank run comes up well over the 2¼-yd rated bucket capacity. Digging bank run, the Michigan handles approximately 5½ tons per bucket-load.

Handling clean-up work in its spare time, the Michigan eliminates stockpile contamination. Unlike the clamshells which formerly handled the job, the Michigan does not pick up dirt as it cleans up around the piles.

More profits for producer and trucker

Faster travel, faster cycles, bigger bucket-loads obviously make more profits for producer and trucker alike. Ohio Gravel Company recognized this fact when the first Michigan was demonstrated. Your own Michigan distributor will give you this same kind of proof. A chance to demonstrate is all he asks—*you name the job.*

Michigan is a registered trade mark of

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 18, Michigan

It took four minutes to put 19 tons of material into this dump trailer. Six bucket loads filled it. Note that the 2¼-yd. Michigan has plenty of dumping clearance over the 10-ft. high side boards. Even with batch boards in place, the Michigan has no trouble.

Another Gar Wood 75B advantage in rock!

Independent travel while swinging, an important feature in Gar Wood's 75B, gives you the extra mobility you need for quarry work. You can swing or hoist while traveling . . . load out a bigger daily tonnage more efficiently.

All three operations—swing, hoist and travel—are easier and safer with a 75B. Direct manual controls retain true operator "feel." Power-actuated drum clutches are easier to engage, positive in operation. Power steering gives the operator finger-tip control and maneuverability, regardless of floor conditions.

Maintenance is easier, too. Massive crawler base takes extreme shock and strain. Heavy-duty double hook conical rollers eliminate pin strain and rocking under load. Independent chain crowd eliminates delays and expense caused by broken cable. Fluid coupling, optional on the 75B, absorbs shocks, reduces wear and tear on machine.

From boom to crawlers, Gar Wood 75B's are designed for efficient economical work in rock . . . built by specialists in ¾ yard machines. Call your Gar Wood dealer for full information, or write to: Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Findlay, Ohio

Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.

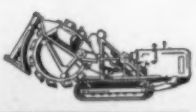
GarWood

Gar Wood-St. Paul Hoists & Bodies

Gar Wood Winches

Gar Wood Tractor Equipment

Gar Wood-Buckeye Spreaders



Gar Wood-Buckeye Ditchers

COMMINUTION
Progressive reduction in size by crushing, grinding or pulverizing.

COMPARATOR
An instrument used for measuring changes in length of test specimens.

COMPARTMENT MILL
Tube mill in which division heads or partitions are used to divide the mill into two or more compartments charged with varying sized media.

COMPEB MILL (trade name)
A compound or compartment mill in which the preliminary compartment is charged with larger media, so that it takes the place of a separate ball mill.

COMPOUND
Chemical substance composed of or produced by the union of several elements. The four major potential compounds of portland cement are tricalcium silicate, dicalcium silicate, tricalcium aluminate and tetracalcium aluminoferrite.

CONCAVEX
Grinding balls characterized by surface indentations which produce both concave and convex areas in the surface.

CONCENTRIC
Having a common center. A kiln and its burner pipe may have a common center line if the burner is aimed equidistant from the sides of the kiln and parallel to it.

CONDUCTION
Transmission of heat through a body without motion of the body as a whole.

CONE CRUSHER
(see GYRATORY CRUSHER)

CONICAL MILL (trade name)
(see HARDINGE MILL)

CONSISTENCY
The fluidity of mortar or slurry (closely related to workability) measured by its flow, or of concrete measured by its slump.

CONSTANT HEAD FEEDER
A raw mix or slurry feeder equipped with supply tank and overflow to assure a constant pressure at the discharge pipe.

CONSTANT WEIGHT FEEDER
(see WEIGHING FEEDER)

CONSTRICTION
A narrowing of the free path of flow such as a dam in a kiln.

CONTINUWEIGH (trade name)
(see WEIGHING FEEDER)

CONVECTION
Transfer of heat by currents in a gas or liquid resulting from differences in density.

CONVEY-O-WEIGH (trade name)
(see WEIGHING FEEDER)

COOLER FAN
Large, rotating fan used to force air through a clinker cooler.

COUNTERFLOW
Process arrangement whereby a fluid (gas, water) of increasing temperature or concentration travels in contact with, but in opposite direction to, a material (clinker, slurry) of decreasing temperature or concentration.

CRADLE FEEDER
Raw material feeder for grinding mill consisting of a chute, at the foot of a bin, through which the flow of crushed rock is maintained and controlled by the rocking motion of a curved plate.

CROSS SYSTEM
A system of segments or crosses of steel or refractory material in the upper end of a kiln and at right angles to the axis. Aids in heat transfer by increasing the surface area exposed.

CURTAIN CHAINS
Chains suspended in the feed end of the kiln in lengths approximately ¾ of the kiln diameter and with only one end of each length attached.

CYCLING
The alternate surging of load in a kiln resulting in excesses and deficiencies of heat for proper burning.

CYCLONE
Conical sheet steel vessel for separation of solids from fluids (air or water) by centrifugal action.

CYLPEBS (trade name)
("Cylindrical pebbles"). Cast or clipped cylindrical grinding media for tube mills, approximately ½ in. in diameter and 1 in. long.

D

DAM
(see CLINKER RING and MUD RING)

DAMPER
A valve, plate, or set of adjustable louvres in a flue used to regulate the draft.

DEAD BURNED GYPSUM
$CaSO_4$ (see ANHYDRITE).

DEFLOCCULATION
The dispersion of flocs or agglomerated particles of finely ground materials. (SLURRY THINNERS).

DIAPHRAGM
Partition, such as used to separate chambers in compartment mills.

DICALCIUM SILICATE
C_2S—One of the four potential compounds in portland cement. $(CaO)_2SiO_2 = Ca_2SiO_4$. Contributes to high ultimate strength.

DIFFUSION FLAME
(see LAMINAR FLAME)

DIRECT FIRING
Blowing powdered coal directly into kiln from a UNIT PULVERIZER without BIN SYSTEM.

"DIRTY" TAILINGS
Rejects from separators containing quantities of fines suitable for the finished product.

DISK FEEDER
A rotating disk or table upon which feed is continuously deposited through a telescope pipe and which is equipped with an adjustable knife edge to divert a determined amount of feed into a mill.

DISPERSANT
A material which deflocculates or disperses finely ground materials by satisfying the surface energy requirements of the particles. Used as a SLURRY THINNER or GRINDING AID (cf.).

DOLOMITE
A limestone or marble rich in magnesium carbonate. Must be limited in raw materials for cement manufacture.

DORRCLONE (trade name)
(see LIQUID—SOLID—CYCLONE).

DRAFT GAUGE
Usually a manometer for measuring the static pressure of the gases passing through a flue.

DRAG CHAIN COOLER
A ladder-shaped chain approximately 1 to 1½ ft. in width used to convey and cool clinker by agitating it so that new surfaces are constantly exposed.

DROP BALL ("Skull cracker")
A heavy weight which is raised by a crane and dropped on large pieces or rock in the quarry for crushing, to eliminate the need for secondary blasting.

DRUM HOIST
A cylinder which when rotated shortens a rope, chain, or wire attached to it and suspended over

a fulcrum to raise or convey a load attached to the opposite end.

DRYING ZONE
That zone near the feed end of the kiln, in which the moisture in the load is removed, usually at temperatures between 400-1200 deg. F.

DRY PROCESS
Process for cement manufacture in which the raw materials are ground, conveyed, blended and stored in a dry form.

DUCT
An enclosed passage or pipe for the flow of gases or fluids.

DUMBBELL KILN
A kiln in which the center section is of a lesser diameter than the ends.

DUST CHAMBER
The chamber or housing at the feed end of a kiln where coarse dust is trapped or deposited through changes in gas velocity.

DYNACLONE (trade name)
(see BAG TYPE DUST COLLECTOR).

E

ECONOMIZER
Chamber beyond the waste heat boilers in which further heat recovery is attained by using the heat from exhaust gases at temperatures of 400-600 deg. F. to heat the feed water for the boilers.

ELECTRIC EAR
(see ACOUSTIC MILL FEED CONTROL).

ELECTROSTATIC DUST PRECIPITATOR
Collector for fine dust, particularly in kiln gases. Dust laden air is passed through a large chamber where the dust particles are ionized by contact with chains or rods connected to one pole of a high-voltage rectifier, and then attracted to and collected on the sides of tubes or collector plates connected to the other (grounded) pole. Collectors are rapped periodically to discharge dust.

ELEVATOR
Roller chain on which are attached heavy steel buckets which carry loads to higher elevations. Usually driven by a pair of toothed sprockets at the head end and equipped with automatic brakes to prevent reversal if the drive breaks down.

ELUTRIATION
Purification by washing and straining or decantation. Air elutriation represents separation or purification by removing particle sizes or forms with varying densities through the use of air pressure. (The reverse of sedimentation.)

ENDOTHERMIC
Chemical reaction requiring the continued absorption of heat such as the calcination or decomposition of limestone.

EROSION
Formation of gullies and ridges in the coating or lining of a kiln near the nose, from direct exposure to intense heat of the flame.

EVAPORATING ZONE
(see DRYING ZONE).

EXCESS AIR
That proportion of the air entering the kiln which takes no part in the burning process and passes from the kiln with the waste gases.

EXOTHERMIC
Chemical reaction in which heat is given off after the action commences. Examples: hydration of cement, and clinkering in the burning zone in kilns.

F

FALSE SET
A manifestation of an abnormal early hydration reaction in which rigidity or partial setting of the paste occurs in a few minutes. When the stiffened paste is remixed without the further addition of water it resumes its plasticity and no loss of strength occurs.

FEEDOWEIGHT (trade name)
(see WEIGHING FEEDER).

FEED PIPE
The pipe through which the feed material to a mill, kiln or tank is conveyed.

FEED SYNCHRONIZATION
Adjusting the speed of a feeder to correspond to changes in kiln speed through automatic electrical or mechanical devices.

FELDSPAR
Any of a group of crystalline minerals composed primarily of aluminum silicates.

FERRIS WHEEL
Feeder with cups or buckets which pick up and move products in the manner of a ferris wheel.

FESTOON
(see LOOP CHAIN).

FIELD JOINTS
Joints in kilns where the prefabricated sections are assembled on site by means of welding or butt-straps.

FILTER AID
Chemical added to slurry to facilitate filtration.

FILTER CAKE
Slurry remaining on the filter cloth after water has been removed, with the residual moisture being approximately 40-50 percent of the original.

FILTRATE
The fluid which passes through a filter.

FINES
(see SEPARATOR FINES).

FINISH DEPARTMENT
The department in a cement plant where clinker is ground into cement.

FINISH GRINDING
The grinding of clinker into finished cement usually with the addition of about 3 to 6 percent gypsum.

FINISH MILL
(1) Usually a tube mill in which the final stages of clinker grinding are accomplished. (2) The entire finish grinding department.

FLAME PHOTOMETER
An instrument used to determine elements (sodium and potassium in portland cement) by the color intensity of their unique flame spectra resulting from introducing a solution of a compound of the element into a flame.

FLAME PROPAGATION
Passing of a flame through an air-fuel mixture. Excessively high fuel-stream velocities may result in unstable ignition; low fuel-stream velocities, less than the speed of propagation, often result in backfiring.

FLAME VELOCITY
(see NOZZLE VELOCITY).

FLASH SET
(see QUICK SET).

FLINT PEBBLES
Hard pebbles of approximately spherical shape formerly used in ball and tube mills as grinding media.

FLOATING TIRE
A KILN TIRE (cf.) slightly

"Bit cost so low with TIMKEN® multi-use rock bits it's hardly an item"

...says Acme Construction Co.

LOCATION: By-Pass State and Federal Project, U. S. Route #52, Welch, West Virginia.

OPERATING CONDITIONS: Soft shale to very hard sandstone.

FOR precision drilling in mountain-side formations from soft shale to very hard sandstone, Acme Construction Co. of Beckley, W. Va., used only one size of Timken® multi-use bits. With controlled distribution of reconditioned bits, Acme got a bit cost so low they barely consider it an item.

Driller after driller gets similar savings. With correct and controlled reconditioning, Timken multi-use bits give the lowest cost per foot of hole when full increments of steel can be used in ordinary ground.

But they may not be the best answer for *all* your drilling problems.

When you drill in hard, abrasive ground, you get higher speeds and greater economy by switching to Timken carbide insert bits. They're your best bit for extremely deep holes, constant-gauge holes, small diameter blast holes.

Timken multi-use and carbide insert bits are important time-savers when your drillers change bits. They're interchangeable in the same thread series. And dozens of different Timken bits fit the same drill steel. Bits can be changed right on the job.

All Timken bits are made from Timken fine alloy steel and have special shoulder unions to protect the threads from drilling impacts. We're the only removable rock bit manufacturer that makes its own steel. We do it to control quality at every step of the way. To find out which bit will save the most and do the best job for you, call on Timken Rock Bit Engineering Service. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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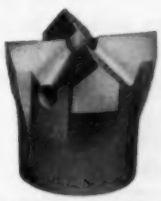
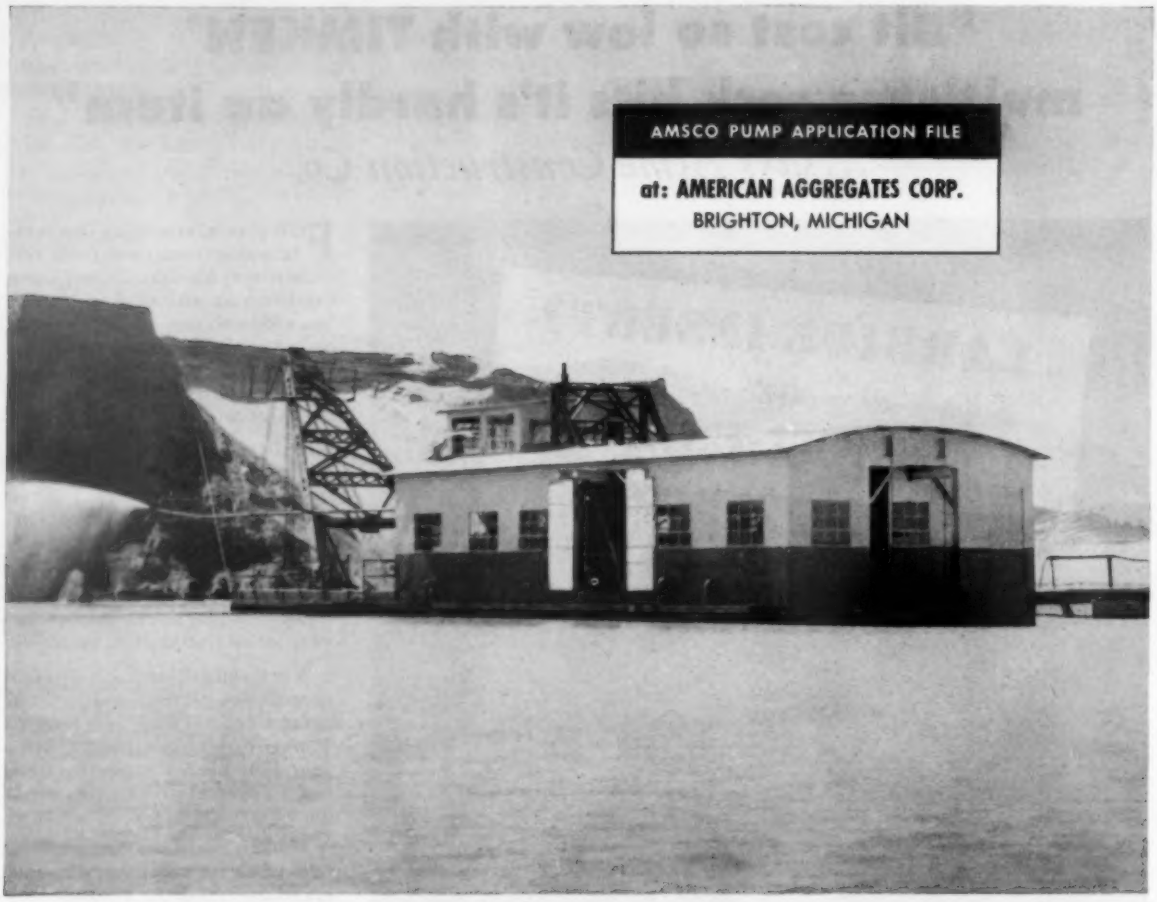
your best bet for the best bit... for every job



Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit



"Started with one AMSCO® pump in 1926 ... now we have 17 in operation"

Twenty-nine years ago, the Brighton operation of American Aggregates Corporation began hydraulic dredging operations with one 15″ Amsco pump. Today, they have 17 pumps in operation, including 6, 10, 12, 16 and 20″ units.

Because the Brighton operation pumps a 60% sand, 40% gravel mixture —just the reverse of American Aggregates market demand—there is substantial pump-back of sand into the excavations. This heavy demand on the pumping equipment is partially responsible for American Aggregates' trend to larger pumping units. According to Mel Kerr, American Aggregates Vice President, "That new Amsco 20″ pump certainly does a job. We produce more on two shifts with this unit than we did with five shifts using a 16″ pump."

Last year, American Aggregates relied on Amsco pumping equipment to make them the world's largest producer of commercial processed sand and gravel.

QUICK FACTS ABOUT AMSCO PUMPS. Whether your dredging operation is large or small, you can get an Amsco Dredge Pump to handle the job. Standard sizes range from 6″ to 20″ discharge openings. Larger sizes are also available. An Amsco pump engineer will be glad to discuss your requirements, or write for Bulletin 1052P, giving full information and specifications on the Amsco line.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DELAWARE, OAKLAND, ST. LOUIS, JOLIETTE, QUEBEC

larger than, and not fastened to, the kiln; held in position by alternate projections on supporting shoes between it and kiln shell and being free to rotate.

FLOCCULATION
Accumulation or agglomeration of fine particles into masses or flocs.

FLOTATION
Beneficiation of raw material slurry by means of surface active agents, agitation, and introduction of compressed air as fine bubbles. Depending on the agent used, impurities such as carbon or excess of silica, alumina or iron are carried to the surface as a foam which is skimmed off. Used for beneficiation in some cement plants where correct mix cannot be obtained by blending of available raw materials.

FLOUR
That part of the ground raw materials or cement of exceeding fineness, generally 25 to 30 microns or smaller in size.

FLOW TABLE
Laboratory instrument used in making flow tests for consistency of mortars or concretes in tests of hydraulic cement.

FLOW TROUGH (BURMISTER)
Laboratory instrument used to measure consistency of mortar to be used for measurement of air content. No longer included in specifications.

FLUE
(see DUCT).

FLUE DUST
Clinker or raw-material dust trapped in flues or pipes because of changes in gas temperature, velocity, or direction.

FLUX
A material used to promote fusion or melting.

FLUXO PUMP (trade name)
Pneumatic conveyor for dry powders, such as cement, consisting of a pressure tank in which the cement is aerated and a transport pipe through which the material is forced by compressed air only.

FOXHOLE
(see TUNNEL).

FREE LIME
CaO in clinker and cement which has not combined with SiO_2, Al_2O_3 or Fe_2O_3 during the burning process, usually because of underburning, or insufficient grinding of the raw mix.

FRIABLE
Easily crumbled or pulverized.

FULLER COOLER (trade name)
(see INCLINED GRATE COOLER).

FULLER-KINYON PUMP (trade name)
A pneumatic conveyor for pulverized materials which embodies a specially designed worm or screw revolving in a closed chamber. Compressed air is introduced at the discharge end of the conveyor so that the mass becomes aerated and semi-fluid, in which state it is carried to its destination through a transport pipe line.

FUSION
Act of melting together.

G

GANG MOLD
A mold for cubes, bars, or briquettes in which two or more are made or cast at a time.

GAS ANALYZER
An instrument using the principle of chemical combination or catalytic combustion in which a sample of gas may be collected and analyzed for oxygen, carbon dioxide and combustible materials.

GEL
A jellylike material. Particularly the cementitious matrix ("paste") formed by the hydration of cement particles in concrete or mortar.

GILLMORE NEEDLES
A pair of weighted, flat-ended needles of different cross section for determining initial and final setting times of hydraulic cements.

GLORYHOLE SYSTEM
A method of mining using a system of haulageways beneath the block of material which has had its top surface exposed by the removal of overburden. Connecting with the haulageways are chutes that extend up to the surface. The excavation of the material begins at the top of the chute, and the broken ore is removed by loading it out from the chutes into cars on the haulage level. The material is worked from the top down.

GRAB SET
(see FALSE SET).

GRANITE
A very hard natural rock, consisting essentially of quartz, feldspar, and mica.

GRIFFIN MILL (trade name)
Similar to and succeeded by BRADLEY MILL (which see).

GRINDABILITY
The response of a material to grinding effort. Can be measured in a number of ways. A current grindability test measures it in grams of product material produced per revolution of a test mill. The more grams produced per revolution, the easier a material is to grind and the higher is the grindability.

GRINDING AIDS
Certain chemical additives which aid in tube mill grinding by eliminating ball coating or by dispersing the finely ground product.

GRINDING BALLS
(see GRINDING MEDIA).

GRINDING MEDIA
Hard, free-moving charge in a ball or tube mill between which particles of raw material, coal, or clinker are reduced in size by attrition or impact. Usually of steel, and spherical in shape with graded sizes, the maximum in a ball mill being about 3 to 4 times the maximum feed size.

GRIZZLY
Screen for large rocks made of heavy steel bars or rails.

GYPSUM
$CaSO_4 \cdot 2H_2O$—Hydrated calcium sulphate added to portland cement clinker and interground in the ratio of about 3 to 6 percent to control the setting time of the cement paste.

GYRATORY CRUSHER
A crusher for rock or clinker in which a steel center cone rotates eccentrically to crush the material against the outside cylindrical or conical steel wall.

H

HAMMER MILL
Secondary crusher in which rapidly rotating bars or hammers pass between grates to crush material by impact. The tolerance between hammers and grate usually is 1 inch or less.

HARDINGE MILL (trade name)
A conical ball mill with a graded charge, designed so that larger balls will segregate in that portion of the mill where the cone has the largest diameter.

HEAT BALANCE
A method of accounting for all the heat units supplied, transferred, utilized in, and lost from a kiln.

HEAT EXCHANGER
Equipment such as chains, quadrants, lifters, etc., which facilitates the transfer of heat from the gases to the load in a kiln or preheater.

HEAT OF HYDRATION
The heat given off by cement paste during the chemical combination of cement with water. An exothermic process.

HEAT VALUE
Heat value of a solid fuel is expressed in B.t.u.'s per pound of fuel on as-received, dry, or moisture-and-ash free basis. Heat values for gases, in B.t.u.'s per 1000 cu. ft., and for liquid fuels, in B.t.u.'s per gallon, are usually computed by adding together the heat contributed by the constituent gases or hydrocarbons.

HELICAL CHAIN
Commonly associated with curtain chains (heat exchangers) in a wet-process rotary kiln. Each chain length attachment is advanced along the kiln shell longitudinally as well as circumferentially. The total curtain is in the form of a spiral along the shell.

HEMATITE
An important ore of iron, Fe_2O_3, red when powdered.

HEMIHYDRATE
A hydrate which contains one-half a molecule of water to one molecule of the compound. In cement, $CaSO_4 \cdot \frac{1}{2}H_2O$ (partially dehydrated gypsum, or Plaster of Paris) is most commonly known.

HERCULES MILL (trade name)
(see ROLLER MILL).

HIGH EARLY STRENGTH CEMENT
Cement (Type III) characterized by producing high early strength in mortar or concrete.

HIGH LIME ROCK
Limestone which contains approximately 75 percent or more of calcium carbonate.

HOLDING POINT
The value selected as a basis for controlling raw material proportions, usually depending on the carbonate reading of the raw mix.

HOMOGENIZER
A bin or tank in which fluids or powders are thoroughly mixed and blended by compressed air, paddles or rakes.

HOPPER
A receiver or receptacle with bottom discharge in which substances are placed to be passed or fed to a mill.

HOT SPOT
An exterior area of the kiln shell, usually in the burning zone, which becomes heated to a temperature sufficient to cause the shell to be red hot or to glow. Usually caused by the loss of coating or lining from the shell.

HUM-MER SCREEN (trade name)
Screening device for separating materials in which electric vibration is applied to a taut screening surface.

HYDRATION
Chemical combination of cement with water.

HYDRAULIC CEMENT
Cement capable of setting under water.

I

IGNITION LOSS
The percentage loss in weight when an as-received sample is ignited to constant weight at 900-1000 deg. C. for short periods of time.

IMPACTOR (trade name)
Large HAMMER MILL (which see).

IMPINGE
To strike directly upon (as a flame may impinge on the load in a kiln).

INCLINED GRATE COOLER
An enclosed, inclined system of moving grates. Clinker dropped on the high end moves progressively to the lower, discharge end while cool air is forced through the grates and load from below.

INDICATOR
An automatic apparatus which shows, by the position of a pointer or level of a liquid, the temperature, speed, or level of equipment or process.

INDUCED DRAFT
Flow of gases through the kiln created by a suction fan.

INSOLUBLE RESIDUE
The material remaining after cement is treated successively with hydrochloric acid, and sodium hydroxide solutions of specific concentrations for designated periods of time.

INSUFFLATION
Practice of adding dust to the coal in a burner pipe.

INSULATING REFRACTORY
A good grade of refractory fireclay brick with a large percentage of open pore space. This open pore space may be about 70-75 percent as compared to approximately 20 percent for high-duty fireclay brick.

INTERLOCKING
Interconnecting of electrical controls to assure that a series of motors can be started only in the correct sequence, or that they are all disconnected at the same time to prevent congestion of material in conveyors and process equipment.

INTERSTICE BIN
A bin formed by the exterior walls of three or more silos or bins, so placed as to enclose the adjacent space on all sides.

ION
An electrically charged atom or group of atoms.

IRON-ALUMINA RATIO
$\frac{Fe_2O_3}{Al_2O_3}$ Varies from plant to plant, depending on raw materials and type of cement being produced. At some plants the reciprocal is used for control.

Note—The second installment of this glossary will appear in the May issue of PIT AND QUARRY.

The Boys at San Leandro

(*From p.* 86)

During the entire emergency the company's current $4,000,000 plant extension program went forward at an accelerated pace. New storage silos were completed, footings were placed for the new (fifth) kiln, and work was advanced for the new administration and shop buildings.

Grant Metzger, plant manager, praised all hands in the quarry and plant for outstanding teamwork during the emergency. The quarry dewatering project was carried out under the direction of Louis Allsman, quarry superintendent, and Earl Bagley, his assistant.

Old timers in the plant area could not recall ever having seen Old Gulch Creek overflow its banks, although they remembered tales of similar high waters some 80 years ago, when this area in the storied Mother Lode country teemed with gold seekers.

from Asbestos to Zinc...

ASBESTOS	IRON ORE	SILVER
ANTIMONY	LEAD	SLAG
CEMENT	LIMESTONE	TACONITE
CHROMIUM	MANGANESE	TIN
COPPER	MOLYBDENUM	TITANIUM
DOLOMITE	NICKEL	TUNGSTEN
FELDSPAR	NITRATE	URANIUM
GOLD	POTASH	VANADIUM
GRAVEL	REFRACTORIES	ZINC

SYMONS® CONE CRUSHERS

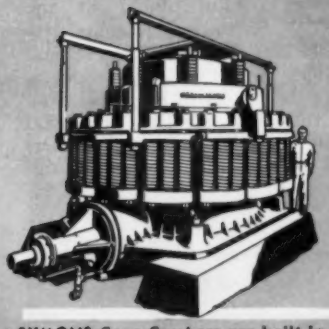
are the leading choice for large volume production of finely crushed material at low cost

In all of the great ore and industrial mineral operations throughout the world, ranging from Asbestos on through Zinc, Symons Cone Crushers have consistently aided man by making possible the efficient reduction of these materials to meet growing demands.

Continual repeat orders for Symons Cones from the world's leading ore and mineral producers conclusively establish this fact.

Whenever *you* are confronted with high capacity fine reduction crushing problems, it will pay you to investigate the advantages of Symons Cone Crushers . . . *the machines that revolutionized crushing practice.*

Nordberg Mfg. Co., Milwaukee, Wis.



• SYMONS Cone Crushers are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to over 900 tons per hour.

SYMONS . . . A REGISTERED NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD

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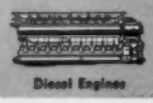
Symons Gyratory Crushers

Grinding Mills

Mine Hoists

Vibrating Bar Grizzlies



Diesel Engines

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TORONTO • MEXICO, D.F. • LONDON • JOHANNESBURG

Feature Machinery Exhibits of N.S.G.A.-N.R.M.C.A. at Coliseum

Annual banquet of National Agricultural Limestone Institute, Inc.

N.A.L.I. HOLDS ANNUAL

Another ON THE SPOT Report

THE eleventh annual convention of the National Agricultural Limestone Institute, held at the Sheraton-Blackstone Hotel, Chicago, Ill., February 15 and 17, 1956 drew the largest registration in the history of the association. The 16th was left free of official activity in order that the members could attend the biennial equipment show of the N.S.G.A. and N.R.M.C.A., whose conventions were running concurrently at another hotel. The guest list included a number of national and state agricultural administrative officials, several of whom took an active part as speakers and panel members in the convention's sessions, in addition to producers from all parts of the country.

Topics of prime interest to the operating members were treated in panel discussions on promotion of agricultural limestone, operating problems, and the agricultural conservation program. The panel handling the discussion on the latter subject included four Department of Agriculture officials who are well-known to the members: Paul M. Koger, new ACP administrator; Lester E. Leigh; Harris W. Soule; and J. W. Clifton.

One of the high points of the meeting was the address given by Ervin L. Peterson, Assistant Secretary of Agriculture, at the general luncheon. Mr. Peterson's popularity with the association was given open recognition by Russell W. Hunt, association director, who presided at that gathering. The assistant secretary acquainted the members and guests with the methods and goals of the ACP administration, and described how N.A.L.I. could make

The new officers of N.A.L.I. are, left to right: Robert M. Koch, executive secretary; J. B. Mount (Maymead Lime Co.), treasurer; Leonard S. Fry (Fry Coal & Stone Co.), president; Russel W. Hunt (Southwest Lime Co.), secretary.

MEETING IN CHICAGO

its contribution toward the success of that program.

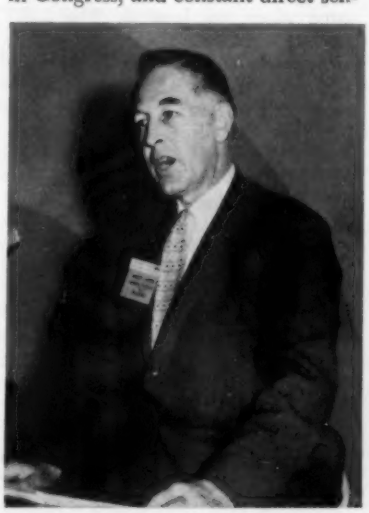
The general sessions were preceded by two days of executive, individual, and joint committee meetings.

President's Address In his welcoming address John H. Riddle (Riddle Quarries, Inc., Salina, Kans.), association president, gave a resume of events transpiring during his tenure of office. He pointed out that during the year of 1955 N.A.L.I. had gained 83 new active members and 42 associate members. Commenting that this growth was welcomed, the president commended the initiative of the institute members.

Mr. Riddle went on to discuss a point that had been raised within the organization during the year; namely, whether or not N.A.L.I. desired representation at the Washington level. An answer to the question was sought through a survey letter sent to each of the association's board members. A tabulation of this survey revealed that the board voted against the policy. A subsequent mail ballot on the question of Washington representation was sent to the rank and file members, who reversed the board of directors' vote. At an executive committee meeting in Kansas City, a vote to uphold the mail ballot resulted. This was decided upon after establishing that the bylaws of N.A.L.I. had not been circumvented, and that an authorized method had been used in reversing the original vote.

It was also noted that the National Crushed Limestone Institute had been recently organized, and that this group had voted to establish representation in Washington.

Koch's Address Robert M. Koch, executive secretary of N.A.L.I., gave his annual review of conditions at the luncheon on the first day of the meeting. He said that the association has come far in its 11 years of existence, and has weathered many storms. Its membership is now at a peak of over 400. But, although it has made much progress, much remains to be done. This association, Mr. Koch stated, was organized to work at both the national and the state levels, and lobbying — educational promotional work—is a primary function. The objective is to make legislators understand the aims of the association and the vital need for agstone. The interest of Congress in soil conservation is constantly increasing. But, Mr. Koch pointed out, there is a one-third turnover every two years in Congress, and constant direct sell-



Speaker at the luncheon was Ervin L. Peterson, Assistant Secretary of Agriculture.

Director Kenneth W. Horne (Limestone Products Corp. of America, Newton, N. J.), W. A. Hulshizer (Limestone Products Corp. of America, Newton, N. J.), W. R. Smallwood (General Crushed Stone Company, Jordanville, N. Y.), J. C. Hayes (General Crushed Stone Company, Rochester, N. Y., and Dana G. Farber (Farber White Limestone Co., Franklin, N. J.).

ing is therefore necessary. Each producer should keep the congressmen in his area advised, and the association will co-operate to the fullest extent.

The ACP appropriation, Mr. Koch stated, has been set at $250,000,000. The Soil Bank Program, however, will take time to get through Congress as many different plans have been suggested. All seem to be agreed on the need for such a program but not on the details. Mr. Koch also described the efforts being made to get the states to modify their mandatory soil tests.

In commenting on the formation of the new National Crushed Limestone Institute, Mr. Koch said that it has been definitely decided to keep this a completely independent organization. Any producer requiring crushed stone services may join N.C.L.I.

Coming Meetings The mid-year directors' meeting of N.A.L.I. will be held June 4 and 5, 1956, at the Chase Hotel, St. Louis, Mo. Because of some duplication in membership, N.C.L.I. will hold its mid-year directors' meeting at the same place on June 6. The 1957 annual convention will be at the Statler Hotel, Washington, D. C., January 20, 22, and 23. This arrangement again makes it possible for those attending to see the presidential inauguration on January 21. N.C.L.I. will hold its annual meeting at the same place on January 24 and 25.

Officers and Directors The new president of N.A.L.I. is Leonard S. Fry (Fry Coal & Stone Co.). Other officers are: first vice-president, Russell W. Hunt (Southwest Lime Co.); secretary, Julius E. Ott (Wallace Stone Co.); treasurer, J. B. Mount (Maymead Lime Co.); executive secretary, Robert M. Koch; assistant executive secretary, Samuel Omasta.

New members of the executive committee, in addition to Mr. Hunt, are: William E. Hewitt (East St. Louis Stone Co.); Thomas E. Stafford (Vermarco Lime Co.); Lynn N. Stewart (Meshberger Stone Co.); and William E. Stone (Piqua Quarries, Armco Steel Corp.). New members of the board of directors are: P. D. Archibald (Callanan Road Improvement Co.); W. M. Palmer Jr. (Dolomite Products, Inc.); and Herbert C. Gray of Tulsa, Okla., honorary director. Robert M. Bridges (Consumers Co.) was named as regional vice-president for Region IV to fill a vacancy due to a resignation.

Committee Reports A report by the membership committee chairman, Budford V. Everett, revealed the growth in the number of member companies in N.A.L.I. In 1954, it was reported, there were 358 companies represented in the association, and that number had grown to 393 in the following year. The need for a larger membership committee was pointed out, along with the suggestion that there should be a committee member from each region.

William F. Childs III, chairman of the promotion and education committee, stated that the *Sales Promoter,* a monthly association publication of promotional material, had been discontinued and indicated that the reason for so doing was based on the apparent inadequacy of the media, since only 340,000 copies were sold in 1955. A new effort, it was said, would be directed at the cotton producing states through the distribution of an aglime leaflet.

Regional reports were combined and the discussion was primarily on the matter of the drop in the use of agricultural limestone by farmers. Reasons which were considered representative of the situation included the following: laxity in the promotion of the aglime program on the part of county offices; increasing governmental red tape, which places obstacles in the path of farmer participation; restrictions which include the stipulation that farmers use other fertilizers in conjunction with aglime as a condition to participation in the cost-share program; and a lack of readily available test equipment for soil testing, along with insufficient knowledge of how to take satisfactory soil samples.

Luncheon Speaker At the association's luncheon on Friday the presiding officer, Russell W. Hunt (Southwest Lime Company), introduced the featured speaker, Ervin L. Peterson, Assistant Secretary of Agriculture. Mr. Hunt's remarks included the statement that the association has for a purpose the improvement of the country's agriculture. He added that while the association has often been criticized for selfishness, the presence of Mr. Peterson in the Department of Agriculture has created a better atmosphere for N.A.L.I. These improved relations are due to the Assistant Secretary's understanding of the industry's aims, and to his extensive experience in general farming and dairying, as well as his agricultural leadership and administration.

In pointing out that the nation's resources come from the land, Mr. Peterson made these observations: there are 2,000,000,000 land acres in this country, of which 350,000,000 are cropland, and 487,000,000 are forested. It was stated that it would be difficult to expand these figures, and that from these areas and their use the country's future abundance would be determined.

With respect to conservation problems, the statement was made that the current water use of 180,000,000,000 gallons daily may well double within 25 years. Highlighting the potential difficulty in this situation are such cases as that of Tucson, Ariz., where the city was forced to buy agricultural land in order to obtain more water rights, and that of the state of Ohio, which is faced with a constantly falling water table. It was pointed out that the use of land has a direct bearing on the future adequacy of water—something in which everyone has a stake.

The waste of resources due to water pollution, deforestation, and erosion has demanded conservation, Mr. Peterson stated, and while it is a nice-sounding word—with different meanings to those engaged in farming, forestry, or recreation—it should be considered as the intelli-

gent use of resources. It was emphasized that to make the present progress toward wiser use even more effective, the natural resource businesses must play a major role in conservation. The landowner, the operator, and the general public must all have a consciousness of the problem and will have support from the Department of Agriculture, which endorses all conservation.

The principles of ACP operation —which has set up cost-sharing arrangements for conservation practices—were reported to include the following points: conservation should be separate from temporary problems such as price supports; it was designed to assist farmers and rancher to maintain and improve land with both immediate and long-term effects in consideration; it should furnish an incentive toward conservation by aiding those who could not do the job alone, and would thereby join the government and citizens in attacking a common problem. It was emphasized that the ACP is not a handout, subsidy, or payment program in the commonly accepted interpretation of those words, nor a production adjustment or means of establishing practices.

It was further stated that the Soil Bank program is intended to create an "underuse" of allotted acreage for the purpose of reducing surpluses. The conservation side of this program has the purpose of removing crope acreage which created surpluses from production. Under this procedure the government would contract with the land owner to keep land in grass for the duration of the contract. In addition, the government would pay toward the cost of establishing specified areas in grass or trees an amount equal to what could have been received for the particular crop. The ACP, it was stated, will determine the best practices for putting land to grass. Mr. Peterson expressed confidence that the ACP program would grow due to increasing acceptance by landowners.

In adding that there are differences of opinion on the ACP, the Assistant Secretary declared. "The Department has no monopoly on ideas. . ." He urged N.A.L.I. members to present their positions and opinions to the Department of Agriculture, which will gladly study and discuss proposals on policies, purposes, etc. As a direct expression of this attitude, Mr. Peterson stated that the power of government (with the ACP program as an example) should be in the hands of the people.

William E. Stone (Piqua Quarries, Armco Steel Corp.), one of the new members of the executive committee.

Annual Banquet Following a reception, the annual banquet on Friday evening was attended to capacity. This event closed this 11th annual convention. John H. Riddle, retiring N.A.L.I. president, expressed his pleasure at having had the opportunity to head the group, and he introduced the association's newly-elected officers, and the banquet speaker, Dr. Ralph G. Brooks, lawyer and junior college president. In his address, titled *From Abundance to Bondage,* Dr. Brooks pinpointed some of the foibles of the American public in its various uses (and abuses) of the human and material wealth of this country.

Manufacturers' Division The annual meeting of the Manufacturers' Division of N.A.L.I. was presided over by Chairman E. C. Farrar (American Cyanamid Co.). He briefly reviewed developments of the last year and the growth of the Division to its present 42 members.

New officers and directors were elected at this meeting. The new chairman is Jules E. Jenkins (Vibration Measurement Engineers). Ralph G. Johnson (Simplicity Engineering Co.), George S. Harvey (National Container Corp.), P. K. Alvord (E. I. duPont de Nemours Co.), and Harry A. Wendler (Highway Equipment Co.), were elected vice-chairmen. W. H. Van Buren (Quaker Rubber Corp.), was re-elected secretary.

The ex-chairman, and the new chairman and vice-chairmen automatically became members of the board of directors. Nine new directors were also elected, as follows: W. H. Plank (Arkell & Smiths); Joe Groden (International Paper Co.); M. E. Greiner (Hammond Bag & Paper Co.); C. W. Mayer (Bradley Pulverizer Co.); Kenneth Lindsay (Iowa Mfg. Co.); Ward McLanahan (McLanahan & Stone Corp.); and D. H. Weber (King Powder Co.). It was pointed out that any director unable to attend a meeting send a substitute.

Panel on ACP For the second successive year the panel session on the Agricultural Conservation Program was an outstanding feature of the association meeting. In addition to Robert M. Koch, N.A.L.I. executive secretary, who took part as the presiding chairman, the panel was made up of four USDA men including the following: Paul M. Koger, ACP administrator, and former CSS director of the Southeast area; Lester E. Leigh, Midwest area CSS director; Harris W. Soule, Northeast area director; and J. W. Clifton assistant director, Southwest CSS area office.

In opening the session, Mr. Koch stated that whereas prior to 1935 the annual use of aglime never exceeded 3,000,000 tons, a figure of 30,000,000 had been reached since the inception of the federal program. Although the consumption dropped last year to about 18,000,000 tons, it was said that there is evidence of increasing usage. The presiding chairman added that while aglime is only one phase of the conservation program, it is nevertheless an important one. It has never received more attention in the Department of Agriculture than it has since the current department officials joined that organization.

Mr. Koger, in addressing the members present, commended the association for its efforts toward educating the farmers, and also indicated that suggestions would be welcomed on how best to get the ACP program operating with increasing efficiency. Referring to statistics concerning the use of aglime, the ACP administrator said that per the agricultural census covering 1954 an estimated total of 17,300,000 tons of lime valued at $69,700,000 was applied to approximately 10,500,000 acres. The ACP estimates that 67 percent of that tonnage was used with the aid of the program. In commenting on the Soil Bank plan, Mr. Koger stated that the increase in grasslands which would result from the application of that program

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HOUGH Design . . Quality . . Value

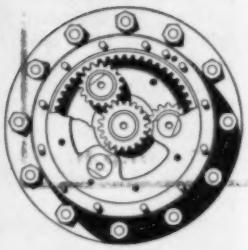
Digging power: Pound for pound, this "PAYLOADER" has more traction and digging power—for a wider range of ground conditions—than any wheeled tractor-shovel ever built.

Hydraulic shock absorber: A shock absorber in the hydraulic system smooths out the ride, permits faster load-carrying speeds over rough terrain—with less spillage.

More production, less effort: Power-steer, power brakes (on all 4 wheels), power shift (no "clutching") and good riding qualities also lessen operator fatigue—promote full production all day.

"Stay-clean" hydraulic system: The hydraulic system is closed and pressure-controlled to keep air and dirt from being sucked into the system. This reduces oil foaming, lessens trouble and increases the life of pump, valves, cylinders, rod packings. Both boom and bucket rams are located so as to minimize their exposure to dirt and damage.

Accessible: Unusual accessibility for servicing and maintenance is built into this "PAYLOADER." Battery and oil reservoir are located under an easy-access cover just behind driver's seat. Easy access to engine is possible from either side—and not hindered by boom arms or other structure. "Pick-off" outlet is provided for the easy addition of hydraulically-operated accessories.



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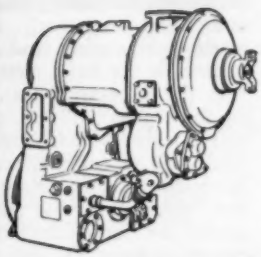
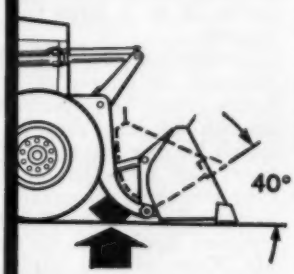
Heavy duty planetary final drives in the wheel hubs, and hypoid differential gearing, keep torque low in axles . . . prolong life of axles and *all* drive train parts. More effective traction is assured by the use of the model HO torque-proportioning differentials. If one wheel starts to slip, more power is delivered to the opposite wheel. The wheel with the better traction automatically gets up to 24% more torque.



Complete power-shift transmission

The easiest-acting, most effective transmission ever built into a tractor-shovel. *All Shifts* up or down can be made instantly, on-the-go under full engine speed. There's no foot clutch, no stopping for a RANGE shift. The forward-reverse control can also be operated under full engine speed, in any gear, while retaining full bucket action . . . all this, plus torque-converter drive.



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Special pads are provided on the bottom of the boom arms to give ground support for powerful pry-out action. Load forces are also absorbed by the pads, relieving the axles and wheels of these strains. The bucket can tip back 40 degrees, before raising, to get heaped loads quick and easy even in shallow cuts and low piles, and to retain heaped loads.

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Title_____

Company_____

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City_____ State_____

would call for a commensurate increase in the use of aglime. He also pointed out that the ACP has a $250,000,000 appropriation this year with which the various features of its work can be carried on.

Mr. Leigh made a point of the proposition that the successful pursuit of ACP projects will necessarily require a great deal of teamwork between federal, state, and county officials, farmers, and operators in the aglime industry. He emphasized that no program can realize success without the presence of good administration at the local level.

In pointing out an important administrative difficulty encountered in the course of work in his area (Midwest), Mr. Leigh stated that the variance in farming practices among the many states automatically poses the problem of establishing a program that will fit or encompass the needs in each section. In specific reference to the liming phase of the program it was stated that, in 1954, 21 percent of ACP payments were for aglime, and that this area alone used over one-third of the money earmarked for lime application.

The Northeast area director, Mr. Soule, remarked that the soil conditions in his area were quite varied, encompassing such differences as those found in Maine and Virginia. This situation creates difficulty for the ACP program in trying to meet the widely different requirements with a practice that would be generally applicable. Further administrative problems were said to spring from the following points: money, since participation in the program is directly influenced by its availability; "red tape", which it was said should be cut to the minimum; lack of a sufficient degree of uniformity in specifications, which could be improved by the establishment of requirements that are generally applicable but still flexible enough to work in differing areas; and the need to clarify objectives for better understanding by the farmers.

Mr. Clifton added the comment that solution of many of these problems could be accomplished by the ACP with the co-operation of the aglime producers. The remarks made by the USDA officials were followed by a lively discussion and a question-and-answer period in which many members participated.

An operator from New York state rose to say that in his area many farmers do not wish to become involved with soil testing, and he asked about the possibility of this requirement being changed. It was also stated that not all of those farmers who signed up had got any aid under the program. In answer to the foregoing, it was said that there is no national requirement for soil tests, but that it may have been a state regulation. With respect to ACP aid to the farmers in point, there could be many factors involved, including the farmers' inability to put up their shares on the cost-share phase.

John M. Deely (Lee Lime Corporation) suggested that there is probably a direct relationship between funds expended for farmer education on the program and the farmer's participation. A member of the panel (Mr. Soule) affirmed this suggestion by stating that the "up and down the road" method of meeting, educating, and signing up farmers is the basic method in getting the program's features across to those who will be directly involved. He added, however, that while this system is effective, it can be costly in time. Nevertheless, it was considered that the method could be accommodated within county budgets. On this point, Mr. Koch interjected the comment that there are some areas which have insufficient funds to take care of educating all or a large part of the farmers.

Another question from the floor requested an answer as to why a farmer cannot be permitted to select his own individual program and establish his own practices. The questioner also remarked on the difficulty sometimes encountered in getting purchase orders officially countersigned. Replying to the first point, Mr. Koger pointed out that consistency with other farmers in the area is a factor which must be given consideration, and with respect to purchase orders the county office manager is authorized to sign them.

In commenting on the situation in his area, a Michigan operator pointed out that the delay often encountered in the processing of applications for participation in the program may have resulted in a large part of the funds appropriated for the area being returned, and that this condition should be corrected. He added that while the industry has a good field in Michigan, there is apparently too small a profit margin to encourage much activity on the part of the aglime industry in that area. It was suggested that a higher price for aglime would serve as an inducement for greater participation by producers in this field.

In reply to a question concerning the possible attitude of the Department of Agriculture toward direct signing up farmers for ACP by producers' salesmen, Mr. Koger asked for more time in which to check on the matter officially. Another query from the floor requested an answer as to whether the soil test requirement is made by the national handbook or is a regulation developed by the state agencies. Mr. Soule replied that although the national handbook had contained this provision previously, it has since been dropped. Mr. Clifton added that the national handbook's treatment of the matter only indicate that a soil test be made where such is feasible. On this subject, Mr. Koch said, "We in the industry are not opposed to utilizing the soil test." In practice, he suggested that it should be a part of the educational effort directed at the farmer and not a mandatory measure which apparently causes many farmers to avoid using lime. It was suggested that the farmer be permitted to apply as much lime as he desires—since he can't overlime—and in support of this suggestion, Mr. Koch pointed out that in every state which has abandoned the mandatory test, the participation in liming activity has grown.

Another matter raised concerned requiring farmers to send an accompanying earlier history of the soil along with a sample of that soil when such is submitted for testing. In explaining the reasons behind this, a panel member pointed out that the varying times of effect that earlier lime applications have on the particular soil (based on such factors as mesh sizes of lime particles contained, nitrogen present, etc.) would have a direct bearing on the amount of lime to be recommended for the next application. It was added that this procedure puts the soil analysis on a safer ground.

Still another comment from the floor concerning soil tests pointed out the inability of farmers to obtain lime in the event of a negative test, while if an analysis suggests, for example, the use of six tons, the farmer may be able to acquire only two under the program. In answer, Mr. Soule stated that this is due to the fact that too much money could be drained out of available funds in servicing one area and thus leave an inadequate provision for another section. He pointed out that these funds have to be spread to meet the needs. Along these lines, Mr. Leigh asked the producers present if in their experience they hadn't found that farmers lime acreage in addition to those treated under the cost-share plan. Answers to this question by the members were about equally divided between "yes" and "no."

A lively discussion on the floor was occasioned by the suggestion that a vocational agriculture representative be added to the state planning committees, on the basis that local county offices are not doing an adequate job of education and disseminating information. A panel member indicated that the county agents are on the county planning committees and should be aware of developments. After further discussion, the chairman called for a vote, and the members present, by a show of hands, defeated a recommendation that a vocational agriculture man be placed on the state planning committees.

In pointing out that 60 to 70 percent of ACP funds are expended on cost-share applications of aglime, a member raised the subject of possibly incorporating an industry member in the state planning committees. Mr. Koger, in answering this suggestion, stated that a move of that nature would have to be expanded to include representatives of fertilizer and similar industries. As an alternative, he suggested that the county offices be appraised of the potential benefits in having an industry man present at meetings on the ACP program.

Commenting on some drawbacks of the program as he sees it, an operator from Missouri strongly recommended the elimination of red tape and pay political influence, and suggested the re-establishment of the farm committees in lieu of local office managers. Stating that office managers follow the policy of county committees, Mr. Leigh stated that a lack of well qualified men had originally dictated the organization of the office manager setup. It was stated on the floor that perhaps there is a lack of confidence and understanding at state and local levels about the aims of the federal organization.

Another recommendation was made from the floor that the purchase order system be revived, to which Mr. Koger replied that the county offices could do so. The membership then voted affirmatively on a recommendation that state committees authorize county offices to issue purchase orders.

A large segment of the members present indicated agreement with the statement of one of their associates to the effect that agricultural limestone has not been properly marketed. It was emphasized that the industry's efforts along the lines of education, promotion, and selling have been neglected and as a result a considerable amount of the ACP's

Jules E. Jenkins (Vibration Measurement Engineers), new chairman of the Manufacturers' Division.

funds established for various areas have been returned. It was stated that these funds could be put to better use, *i.e.*, liming the soil, if the industry would exert itself in the directions mentioned previously.

Panel on Promotion The general session on Wednesday afternoon was devoted to a highly informative panel discussion on the promotion of aglime. The members were first addressed by Clyde Rapp, vice-president of the Foote, Cone and Belding advertising agency, who stated that there is very little difference in the basic points involved in advertising agricultural limestone, as compared with any other consumer product. He stated that he felt a three-year promotion plan should be set up for N.A.L.I. and that this should be a comprehensive plan aimed at big results. It was suggested further that market and product research must be carried out to give best direction to the promotional effort.

With respect to expenditure, Mr. Rapp stated that it was his experience that there are fewer failures among the advertising overspenders than in the opposite category. Mr. Rapp also suggested that N.A.L.I.'s present advertising could be improved by the incorporation of more emotional appeal to the farmer, who must be impressed with the fact that he is being sold something which will benefit him, his farm, and his product.

The panel participants—all members of the association—included: R. B. McNab (American Limestone Company, Knoxville, Tenn.); William E. Hewitt (East St. Louis Stone Company, East St. Louis, Ill.); W. Dean Fyock (Fry Coal and Stone Company, Mercersburg, Pa.); and William E. Stone (Piqua Quarries, Armco Steel, Piqua, O.).

Mr. McNab related his recent experience at the Midsouth Fair in Memphis, Tenn., where he found a decided increase in interest in aglime on the part of more than 25 percent of the farmers present. He felt that promotional efforts were directly responsible for this encouraging reaction.

The interrelation of sales, promotion, and service was emphasized by Mr. Fyock, who recommended several methods for improving those efforts. It was suggested that the aglime producers provide a soil testing program as a service for potential customers. Personal contact with the customers, it was said, is the best means of developing sales; and along this line the producer should evidence enthusiasm about his product. It was also pointed out that clean and appealing delivery equipment is an effective factor in merchandising the material.

In discussing the soil bank plan, Mr. Hewitt remarked that if that program were handled properly, its acceptance would mean that more acreage would be seeded and limed over a given period of time with the probable resultant benefit to this industry of increasing aglime sales.

Mr. Stone presented his opinion that the promotion of the aglime program should be undertaken on a state rather than on a national level on the premise that national promotion is too broad in scope for this type of activity. He pointed out his company's returns in good will established by the two agronomy scholarships at Ohio State University, which his company provides. He stated that while this does not sell aglime directly, it has a potential long-range benefit since the agronomy students and department are made conscious of the product. Mr. Stone also suggested that truckers should be induced to go out and contact farmers during slack periods inasmuch as they benefit from the sale of aglime commensurately with the producers.

Operating Session

Abandoned Mines The operating session on Friday morning was presided over by vice-president R. W. Hunt, who introduced Kenneth Joy, an Army Ordnance Corps engineer connected with the government program to move vital stores and industry underground. One phase of this movement, known as the "Production Readiness Program", is the storage

of machine tools in worked-out mines. Mr. Joy described the experience with a mine near Atchison, Kans. This underground area had originally been equipped for the refrigerated storage of food (see PIT AND QUARRY, January, 1955, page 40, and April, 1955, page 39), but excessive moisture made this impractical. The refrigeration equipment was converted for dehumidifying and brought the humidity down from 95 percent to about 30 percent, a level which not only prevents rusting but also arrests it.

The 13-ft. ceiling in this mine is ideal, said Mr. Joy, as it is high enough for the common carriers without excessive waste height. In May, 1951, a more efficient type of humidifier was installed in the form of dessicant beds, which are recommended for all mines. The temperature in this mine varies little from the average 70 deg. F. and any CO from lift trucks is controlled by catalyzers. In closing Mr. Joy said that not all mines are suitable for this purpose, and that the cost of preparing a suitable mine, including purchase, can not exceed $2.50 per sq. ft. Operating cost runs about 6 cents per sq. ft. annually. Mr. Hunt pointed out that any storage firm will pay 40 cents per sq. ft. of usable area for the use of a mine suitably located.

Panel on Operations The panel on operations on Friday morning was a feature of the meeting. Participants were four members of the industry with wide operating experience, who called on producers and associate manufacturer members in the audience to help answer questions in their respective fields. Some of the questions were submitted previous to the meeting, and others were asked from the floor.

The presiding chairman was C. A. Broecker (Newton County Stone Co., Inc., Kentland, Ind.). The other panel members were Charles Rich (Swanton Lime Works, Inc., Swanton, Vt.), Thomas B. Stafford (Vermarco Lime Co., Proctor, Vt.), and Buford V. Everett (Everett Quarries, Inc., Plattsburg, Mo.). Cooperating manufacturers were: E. C. Farrar (American Cyanamid Co.); D. H. Weber (King Powder Co., Inc.); Jules E. Jenkins (Vibration Measurement Engineers); Ralph Johnson (Simplicity Engineering Co.); and Wayne King (W. S. Tyler Co.).

Blasting In the field of blasting it was pointed out that the ammonia type of explosive recently made available is not really new, having been used in strip coal mines for some years. This type of explosive is being made by a number of companies, so far only in large cartridges, from 4- to 11-in. in diameter. This product is not considered a high explosive—it contains no nitroglycerin—and is called a blasting agent. It is rated about 64 percent nitroglycerin equivalent and has a rate of 5,000 to 6,000 f.p.s. Since it is not cap-sensitive, a primer must be used; about 20 percent primer is advised. It is somewhat cheaper to use than regular explosives, it can be shipped more cheaply, and less care is necessary. It cannot be used in wet holes at present, but a waterproof package is being developed. There is no deterioration in storage as long as it is kept dry. Storage in a magazine is not necessary but is advisable to prevent theft.

W. H. Van Buren (Quaker Rubber Corp.), re-elected secretary of the Manufacturers' Division.

Samuel Omasta, assistant executive secretary of N.A.L.I.

Operator's Liability The extent to which a quarry operator is liable for explosives was illustrated by the example of a small producer who had no magazine, all blasts being supervised by an explosives firm. One stick of dynamite was left over from a blast, and, somehow, three youngsters 14 to 16 years of age got hold of this. They decided to blow up an oil drum with blasting caps they had got somewhere else. They hid behind a building, but one of them looked out as the explosive went off, and was killed. The court ruled the producer and the explosives company jointly liable for damages.

Drilling There was some discussion of a new type of sectional wagon drill steel recently put on the market. This comes in 10-ft. lengths which are added on as needed, saving much time and expense. Producers reported using this steel successfully to depths of 60, 90 and 105 ft. with a 3-in. bit. Some connector breakage was reported, but others reported up to 2,500 ft. of hole without breakage. It was stated that this steel is also available in 6-, 8- and 12-ft. lengths.

Screening Wet Fines The use of screen heating to prevent blinding with fine material was discussed by several producers and manufacturers' representatives. Opinion was unanimous that heating works very well if the material is not soaking wet or "bleeding." A test is to put minus-20 mesh material on a sheet of paper; if it doesn't bleed, it will screen. It will not handle material mixed with snow or ice as this only melts the snow; with this condition it is better to screen cold. It is also felt that heating is efficient only for material ⅛ in. or finer—the use of ball decks is preferred for coarse material. A combination of the two methods was also advised, and changing of the screen angles sometimes helps. Some trouble was reported with electric connections due to screen vibration and to fouling up. Producers were advised that for best results resistance must be balanced to fit the current available and the existing conditions.

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Labor Developments

1956 Union Demands

By S. HERBERT UNTERBERGER
S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

Another P&O Exclusive

FOR no very apparent reason, collective bargaining is a seasonal business. Most of the contracts in the principal pattern-setting industries expire in the spring of the year. Thus, labor unrest seems to grow about the same time that the sap begins to flow.

The principal improvement in recent over previous years is that with the lengthening out of union contracts from one to as high as five years, strikes do not seem to be threatening in every important industry almost every year, as was formerly the case. For example, last year's contract in the automobile industry settled matters until June, 1958. Also, last year in the steel industry, no demand for guaranteed wages or supplementary unemployment pay could be made because it was covered by a two-year contract under which only changes in wage rates could be considered at that time.

However, this year the labor agreement in the steel industry is again completely open for negotiation. It looks now as if this will be the key bargain this year. The union has already announced its demands—and they are not inconsiderable. Here are the major benefits the union wants:

1. *A substantial wage increase.* Adopting again a coy attitude which the leaders apparently feel yielded advantageous results once before, they have avoided declaring for a precise amount, saying instead that this is flexible and will depend upon the cost of the total package. It appears, however, that they are unlikely to be satisfied with much less than the 1956 increase which the automobile workers are due to get under the contract negotiated last year before the exceptionally high profits earned in the automobile and steel industries were known. This is around 8 to 10 cents an hour.

2. *A supplementary unemployment pay plan.* There is practically no question about the cost of this demand. It will no doubt be the conventional 5 cents an hour which has been agreed to by the automobile companies, the plate glass manufacturers, the can fabricators, and many others. With respect to the kind of supplementary unemployment pay plan which they want, the union has already told the steel companies to look at the plans negotiated in the can industry. These plans provide unemployment pay to employees with three or more years of service equal to approximately 65 percent of their previous after-tax straight-time earnings for a total of 52 weeks of unemployment. This pay is to be made up of state unemployment compensation payments plus such supplementary unemployment pay as is necessary to reach the 65 percent figure. For weeks after state unemployment benefits are no longer payable (after 26 weeks in most states), the total benefits are payable out of funds contributed under the plan.

While the 5 cents per hour contribution may be presumed to be adequate to finance the benefits in the automobile, can, and other industries where the companies and unions have agreed to this amount, there is as yet no certainty that it will also be adequate to finance the benefits in the steel industry. As a matter of fact, the union has just begun a study of this matter, and in connection with the project the union officials have asked the companies for a great deal of data.

3. *Penalty pay of time and one-half for Saturday and double time for Sunday.* This looks a simple demand, and many employers who have paid such penalty overtime for many years have been surprised to discover that the steel industry has not been subject to this requirement. The principal difference is that many steel operations must be carried on round-the-clock and seven days a week. This is in the nature of the process, particularly operations in which furnaces cannot be permitted to cool off.

Almost universally, Saturday and Sunday assignments have been rotated among the employees doing that kind of work, so that an employee is rarely required to work every week-end. The steel industry has always operated on the assumption that the wage rate for these rotating work operations included an element of compensation for the fact that the employees were required to work at these undesirable times.

The present attempt is to change that concept. This is probably the most costly of the current demands. The companies estimate costs as high as 25 cents an hour if they are unable, for technical reasons, to change the volume of Saturday and Sunday work. This gives some indication of the volume of such work. As might be expected, the union's estimate is much lower.

However, the union spokesmen argue that the objective of the demand is not principally to increase the wages of employees who are required to work on Saturday or Sunday, although they insist that the personal inconvenience involved should be compensated for, but rather to give the companies an incentive to reschedule that production which does not absolutely have to be done on Saturday and Sunday to the more normal work-days. If this is done, the union argues, the cost would be less than 6 cents an hour. The real debate, therefore, is over how much Saturday and Sunday work can, in fact, be rescheduled and what the cost of that rescheduling would be in the way of lost efficiency and increased capital equipment required to do the work.

4. *An improved social insurance program.* The additional coverage and benefits would probably add 1½ cents per hour to the cost of the health and welfare and pension programs.

5. *All social insurance benefits to be paid for by the company.* At present the companies and the employees share a 9 cents per hour cost for these programs. If the cost paid by the employees were shifted to the companies, this would add 4½ cents per hour to their payment. It could have been anticipated that this demand would come sooner or later. Here, too, the steel industry lagged behind others, in which all the social insurance costs were borne by the

(*Continued on page* 142)

Johnson's Asbestos Opens New Mill, Mine At Black Lake, Que.

processing incorporates gravity flow, ball milling

Another ON THE SPOT Report

By BUREN C. HEROD

THE most famous asbestos producing area on this continent, located in the southern part of the province of Quebec, Canada, has witnessed considerable new activity in the asbestos developments during recent years. At Black Lake, about 50 miles south of Quebec City, the Johnson's Asbestos Company furnished one of the most impressive examples of that activity when its new open-pit mine and 4000-t.p.d. mill went into operation in the fall of 1953.

Privately owned, this company is one of five major asbestos producers in the Thetford Mines-Black Lake district of the province, and to increase production in meeting growing demand it invested about $8,500,000 in the present modern facilities, which replaced an older plant of only 900 t.p.d. ore handling capacity.

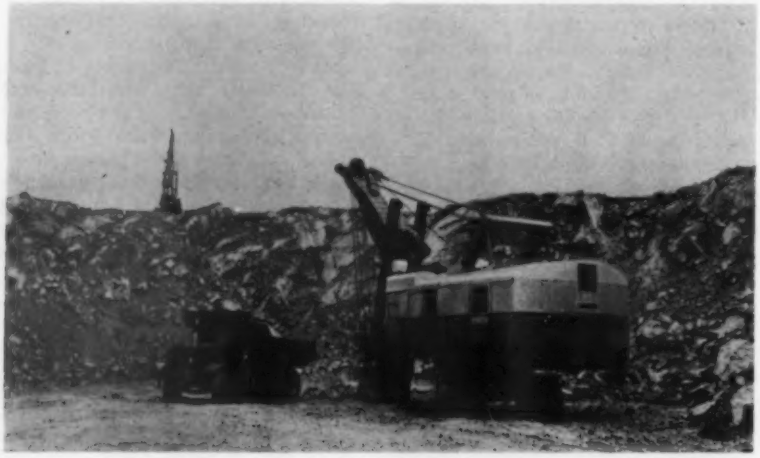
Following the processing and flow adjustments that commonly accompany banking-in operations, full production has been realized. Features of the new mill include a full gravity flow from top to bottom of the 8-story structure, four completely separate processing circuits, and the use of ball mills for the greater part of the fine reduction, as opposed to the more general asbestos plant practice of hammermilling.

In addition to the above design and processing features, the idea of obtaining sufficient "elbow room" was stated to be a pertinent point of consideration in plans for the new operation. Evidence of the achievement of that goal is seen in the commodious structures housing all departments from pit truck maintenance through crushing, drying, dry rock storage, and milling. No section of the flow is operating in a cramped or confining area, and virtually every item of equipment is subject to easy access. Nor was potential flexibility of processing ignored, as seen in the type of construction used for the mill floors. With 2- by 6-in. lumber, on edge, covered by hardwood, a change of flow lines can be easily accomplished by merely unbolting, respotting, and bolting the equipment down in its new location.

The old mill, still standing and used as storage space, originally processed ore from a pit opened on the Black Lake property in 1900. In 1946 diamond drilling disclosed a new ore body in the peridotite mass that lies within the main Thetford Mines-Black Lake mineralized zone. This ore body was drilled to a depth of 350 ft. and proved to have a fiber content varying between 1½ and 4 percent. It is estimated that there are many years of open-pit reserves, with additional ore available to underground operation when a 300-ft. depth is reached in the pit.

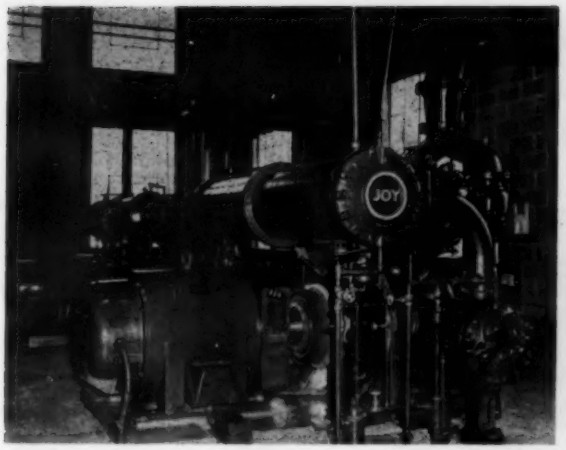
After opening the new pit known as No. 3, the ore was tested in the old mill, where new types of milling equipment were tried out before the construction of the new mill. The latter was completed and in full operation by April, 1954.

Bench intervals of 40 to 50 ft. are used in the pit, where two 4-in. Joy TM 500 drills and two mobile twin-mount 2½-in. Ingersoll Rand 505 drills are employed in primary drilling, which is carried out only on the day shift. The pattern provides for drill holes on 14-ft. centers, 10, 12, and 14 ft. back from the face of the



Above: A scene in the new Johnson's Asbestos pit which gives an indication of the size of the material loaded out for haul to the primary crusher.

Right: A haulage unit dumping into the hopper that feeds through a 45-degree chute to the primary crusher. Ground level of the crusher building (behind this truck dump hopper structure) is about 50 ft. lower.



The two air compressors, each of which provides air at 1,572 f.p.m. These units supply air both to the pit for drilling and to the new mill for the bagging operations.

The ample space provided for installation of practically all equipment is evident in this view of the primary jaw crusher. Rock is chuted to this unit from the truck hopper.

high wall. The 4-in. holes are charged with 40 percent 3- by 16-in. Forcite, while for the 2½-in. holes (in the toe, primarily) a ¾- by 16-in. size is loaded. Secondary drilling is a hand operation in which 1-in. pneumatic units are utilized. Three old boilers converted into air receivers supply air for all drills at a pressure of 100 p.s.i. through a 4-in. line. The receivers are supplied through a 6-in. line from two 300-hp. Joy air compressors in the pit truck garage. These compressors, which also supply the bagging operations at the mill, provide air at 1,572 c.f.m. each.

Broken rock is loaded out of the pit on two shifts by a 5-cu. yd. Marion 4161 electric shovel. Two 3-cu. yd. Marion 101M shovels are used as auxiliary units for loading of either waste or ore. Six 23-ton Mack trucks with 275-hp. supercharged Cummins diesels haul from shovel to crusher hopper, and two others are kept in standby status. Maintenance and operation of these haulage units are of an unusually high caliber. A spacious 68- by 129-ft. concrete block garage and repair building is well equipped with overhead cranes, below-floor repair and lubrication pits, and most of the equipment required for virtually any maintenance or repair to trucks and pit drilling units. When trucks are not in operation, three mechanics and a welder (day shift) and an oiler and a greaser (night shift) keep the haulage vehicles in excellent condition. The drivers themselves are said to be rather jealous of the equipment; and once assigned a unit each wishes to keep its operation on an individual basis. The concern felt by each driver for his particular truck is evident in the frequent daily wiping the men do over readily accessible areas of the chassis.

After a haul of about ½ mile to the primary crusher plant, the ore is dumped into the crusher feed hopper which is on a ground level about 50 ft. above that of the crusher building. From the hopper the ore drops through a 45-degree chute to an Allis-Chalmers 48-by 60-in. jaw crusher on the ground floor of the crusher house, where it is reduced through a 4½-in. setting.

The crusher product is discharged to a 36-in. by 565-ft. belt conveyor and carried up to a transfer point between the crusher and dryer building, from which it is returned on another 470-ft. belt to the upper floor of the crusher house. At this point it is discharged to three Nordberg-Symons single-deck rod screens. Oversize material retained on the 1⅝-in. rod spacing is conveyed to a Nordberg-Symons standard gyratory crusher, where secondary reduction is accomplished through a 1½-

One of several belt conveyors (with trippers) used in the plant flow, this unit supplies crushed rock from the crusher building to four cylindrical 1,000-ton bins from which the dryers are supplied.

A view of the drive on one of the four 5- by 60-ft. dryers.

One of the closed conveyor galleries is seen here between the crusher building on the left and the dryer building on the right.

in. setting. This secondary discharge joins the primary crusher product and is again put through the screening circuit.

Minus 1½-in. material passing the screens is transported on a 30-in. by 585-ft. belt conveyor leading to the upper floor of the 4-story dryer building. This conveyor, as well as all others transferring ore between buildings is housed in a closed gallery. From the time the ore is dumped into the crusher feed hopper until it reaches the mill for processing, it is never exposed.

At the top of the dryer building the crushed ore is discharged to a Link-Belt conveyor with a tripper unit that feeds four cylindrical 1,000-ton bins. From the bins the ore is transferred by a Hardinge Constant-Weight feeder below each bin to belt conveyors that supply four dryers. About 100 tons of rock per hour is fed to each of the 5- by 60-ft. Hardinge dryers. The combustion chambers are lined with A. P. Green Super Plastic refractories, and fired by Hauck oil burners supplied from two 75,000-gal. oil storage tanks.

The time required for the rock to pass through the dryer is 7 to 10 minutes, during which interval it is subjected to a temperature of about 200 deg. F. Close control is maintained in this phase of the process due to the fact that for effective aspiration of the fiber from the rock in the mill flow the free moisture content of the rock fed to the mill must not exceed one percent. This low figure is attained in the drying process; and the latent heat of the material accomplishes further reduction of moisture during the period of storage in the dry rock building, with the result that less than one percent is actully present when the ore enters the mill.

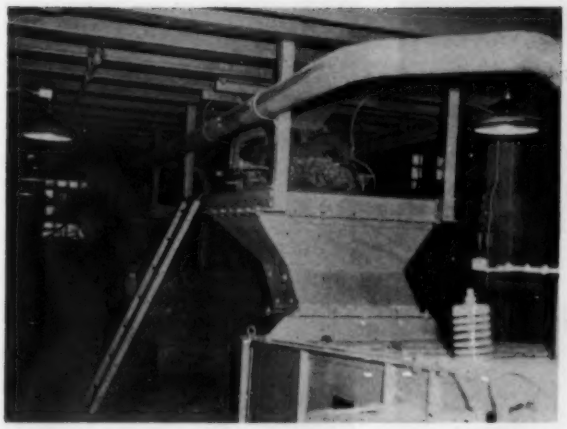
From the end peripheral discharge of each dryer, the ore is chuted to a 30-in. transverse belt conveyor serving all four units. This conveyor in turn discharges to another belt conveyor, which transports the material 735-ft. on an 18-degree lift to a transfer point near the top and at one end of the long dry rock storage building. Here the dried ore is transferred to a 380-ft. horizontal Link-Belt conveyor equipped with a tripper that distributes the material on a stockpile running the length of the structure. About 30,000 tons, of which approximately 2,000 is live storage, are maintained in this dry rock pile.

In a tunnel below the storage pile are 54 draw points with manually-operated clam shell gates. Two Jeffrey-Traylor track-mounted magnetic feeders are used in transferring 4,000 tons (in 2 hours) from the draw points to a reclaiming conveyor. The latter discharges at the end of the dry rock building to the 1,030-ft. feed conveyor leading up to the top of the 8-story building. Ore is fed there to a 285-ft. horizontal conveyor with a tripper that supplies the mill's 200 ton-capacity surge bin.

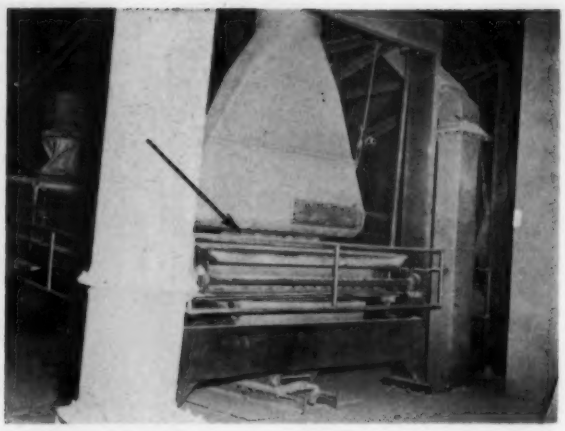
In effect, there are two separate material flows—one of rock and the other of fiber—in the four circuits between the surge bins and the cleaning screen stage. Briefly, the rock flow starts in each similar circuit when the ore is fed from each of the four surge bins by a Hardinge Constant-Weight feeder to the respective 3- by 6-ft. Nordberg-Symons single-deck rod screen. Material passing the ½-in. rod spacing is chuted to the "A" screen stage where four company-designed 5- by 12-ft. double-deck tandem shakers are fitted with perforated plates.

Bottom-deck throughs from these units are chuted to a separate processing line for "shorts" (short fiber). Material retained on both decks of the "A" screens is joined by the oversize from the rod deck screens and fed to gyratory primary crushers—two circuits feeding a Symons 3-ft. Short Head, and two a No. 38½ Kennedy-Van Saun.

Through the conveyor gallery (left, center) dried rock is transported to the dry rock storage building, where about 30,000 tons are maintained. From this storage the rock is conveyed to the top of the mill building (right center). The new change house and the shop building are seen in the foreground.



These four feeders transfer the ore from the mill's surge bin to the four lower rod screens in starting the flow of material through the mill.



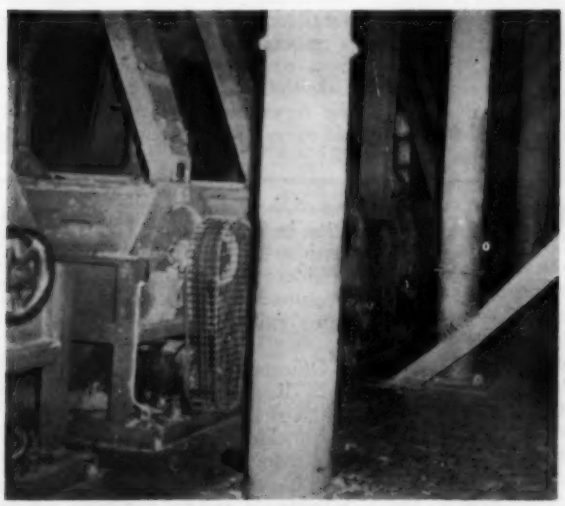
In this view of one of the screening phases in the mill flow, fiber being aspirated can be seen between the hood and the top bar of the guard rail.

Crusher discharge is sent to the "B" screen stage (similar to "A" with the exception that a screen is used on the top decks and there are two shakers in each circuit). Here again the bottom deck throughs are fed to the "shorts" circuit, and the material retained on both decks is chuted to secondary crushers which are identical to the primary units. Discharge from the secondary reduction is sent to "C" stage, where all decks of the eight double-deck screens are fitted with screen cloth. "C" screen throughs go to the "shorts" line, and retained product (plus 1/16-in.) is stored in surge bins from which it is chuted to a battery of four ball mills. In completing its flow, the rock residue from ball milling is conveyed out of the mill to the tailings dump.

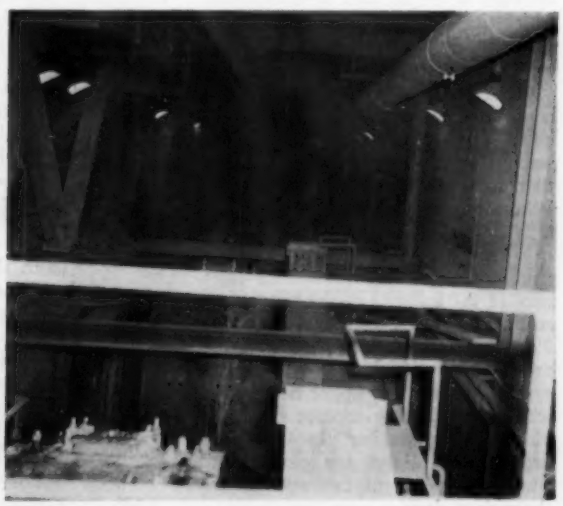
With respect to the fiber, its flow is initiated in each of the four circuits at the "A" stage. There are two "lifts" — aspiration hoods and connecting lines—on each of the 20 screens comprising the "A" and following "B" and "C" stages. Fiber aspirated from each of these units is collected in 12 cyclones of 72-in. diameter and fed to the Hall-Donovan "D" stage (cleaning) screens, of which there are 36. The four separate circuits terminate here.

Through a single lift on each of the cleaning screens fiber is drawn off and collected in another series of cyclones that range between 60 and 80 in. in diameter and then chuted to a battery of graders. These units are company-designed cylindrical trommels with fixed perforated plates and a rotating shaft with feeder arms. Longer fiber from the graders is put over the succeeding cleaning screens and then sent to bagging bins, while the shorter lengths are put through six or more groups of graders. The longer fibers are drawn off in each successive group, and the shorter material progresses through the entire grader system. From the last of these groups (No. 7) the remaining fiber is transferred to the shorts circuit.

In the latter process the short fibers are produced by passing the "shorts" through three "Jumbo" hammermills and screening the resulting product on a fine mesh screen. Fiber aspirated from this circuit then joins the graded material from the Group 7 graders and is transferred to one of the eight finished-fiber storage bins.



The graders seen here are part of one of seven such groups. These units are company-designed cylindrical trommels with fixed perforated plates, and a rotating shaft with feeder arms. The longer fibers are drawn off in each successive group.



These ball mills represent a departure from the more common hammermilling practice in asbestos processing. Company engineers installed them in the belief that results would show better fiberization with less fiber damage.

A view of part of the bagging operation and area on the first floor of the new mill. Fiber from the overhead finished product bins is packed in 100-lb. bags.

Eric Pharo, center, superintendent of the new mill; Archie Kinnear, left, Mr. Pharo's assistant; and L. Lavigne, right, superintendent of pit operations.

In the ball-milling circuit, the surge bins which supply the four 66-in. by 10-ft. Hardinge mills are fed all of the plus 1/16-in. material from the screens in the "C" stage. Ball mills were installed based on the belief of the company's engineers that this process would result in more nearly complete fiberization with less damage to the fibers than by other methods. The mills are driven at 18.3 r.p.m. by 350-hp. G-E motors through Falk speed reducers, and are charged with 2- to 4-in. balls. Each is in closed circuit with its individual 200-hp. Clarage fan and 16-ft. cyclone collector. About 60,000 c.f.m. of air is drawn through these systems at a 10-in. water gauge. Material collected in the ball mill cyclones is fed to rock screens, from which it makes normal progression through the balance of the process to the storage bins.

Fiber collection in the mill is accomplished by four Sheldon 120,000 c.f.m. fans which draw from every step in the process to cyclones and then to a 14-compartment American Wheelabrator Corporation bag-type unit. Four of the compartments in this collector serve the ball mills exclusively, while the remainder take care of the balance of the processing equipment. Each compartment holds 720 cotton sateen bags 5-in. in diameter and 126-in. long. Louvres extending over the upper three stories of the building on one side provide for exhausting through that area. When these are closed, the system exhausts to the atmosphere through a duct.

During the daily three-shift operation of the mill all eight standard products, and blends as required, are bagged from the finished fiber storage by three packers mounted on an overhead track below the bins. The fiber is packed in 100-lb. bags.

This entire output is loaded in railroad cars, destined chiefly for Quebec and shipboard loading. The larger portion of the production is absorbed by overseas markets, although there are also shipments consigned to asbestos product plants in the United States. The company does no manufacturing of asbestos products and sells all of its finished fiber.

In addition to the various structures discussed in the preceding description of the flow of ore from pit to mill, several other buildings were erected during the expansion of the operation. Among these are a large new machine shop, an employees change house and lunch room, a warehouse, and an office building. In a parking lot provided near the change house the individual spaces have electric outlets installed for the use of engine heaters during the severe winter temperatures. Power supply for the operation enters a transformer station at 60,000 volts and is stepped down to 2,200 volts.

The home office of the company is located at Thetford Mines, about four miles northeast of Black Lake, where Johnson has another mine and a mill of about 2,800 t.p.d. ore capacity. Under the direction of A. S. Johnson, president, and W. J. Johnson, managing director, the productive capacity of this progressive organization has been substantially increased in the last few years. They have been ably assisted by M. C. Pharo, who as superintendent of mills has direct responsibility for both plants, and by J. M. Cunningham, superintendent of mines, who is responsible for the mining operations at both locations. At Black Lake the new mill operation is under the supervision of Eric Pharo, and pit operations are supervised by L. Lavigne.

Labor Developments

(*From page* 137)

employer from the start.

Even the union concedes that the total cost of meeting their demands is likely to be 32 cents an hour. According to the company calculation, it would be closer to 49 cents. Using the rule that unions usually get about half of what they ask for, it looks as though this key 1956 bargain may amount to 15 to 25 cents an hour.

The following officers were elected on January 10 at the annual meeting of the Kansas Limestone Association in Ottawa, Kan.: Perry Jones, president; Harold Oxandale, vice-president; R. F. Killough, secretary-treasurer; and Marshall Carr and Sam Walker, directors.

Officers of Houdaille Industries, Inc., Buffalo, N. Y., recently announced the acquisition of outstanding stock of the North Jersey Quarry Co., Morristown, N. J. Houdaille now has a controlling interest in the 60-year-old quarry company, which operates stone quarries, gravel and sand pits, and mixed concrete and blacktop businesses in 13 locations.

WHY

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LAST SO LONG

There are two reasons why KENSINGTON tracks give longer service, even under the severest working conditions.

First, vastly improved design.

Second, they are made from a superior, wear-resisting alloyed manganese steel.

New design. KENSINGTON tracks have only three parts . . . the rail, the grouser, and the pin. Rails are cast in *one piece* to add strength and prevent wear caused by the constant twisting and weaving found in ordinary tracks.

Grousers have anti-shear lugs which fit snugly over the tie bar of the link to eliminate loose plates, elongated bolt holes, and side-sway. Grousers are heavied-up at all critical points to better resist bending and breaking.

Pins, constructed of a special alloy, are pressed tightly in place under high pressure to give further rigidity and near-perfect alignment.

Yet, even with all these design improvements, KENSINGTON track assemblies fit all standard, popular make crawler tractors.

Steel with stamina. Development of several remarkable wear-resisting alloyed manganese steels, including ORO Supermang and Kenkrome, has also increased the wear-ability of KENSINGTON tracks. These already-hard metals *actually fight back against wear!* They develop *extra* surface hardness when exposed to friction, abrasion, or impact. Yet, under this ever-hardening "skin," these metals stay tough and strong. That's why KENSINGTON uses Kenkrome in its rails and Supermang in its grousers.

Economical, too. Though KENSINGTON tracks cost slightly more than those supplied by the tractor manufacturer, they enable you to make substantial savings.

They give you many more hours of service per dollar of cost, less time lost for maintenance, and increased operating efficiency because KENSINGTON tracks keep their "pull-bracing grouser area" for a longer period of time. Also, you can maintain a smaller inventory of repair parts.

Discover for yourself how many hundred dollars these tracks will save you over the next few years.

Other wear-resisting KENSINGTON replacement parts

FOR TRACTORS
Kenkrome replacement rims for worn sprockets. Ready to weld on.

CRUSHER PARTS
Jaw plates, roll shells, mantles and bowl liners, hammers, grate bars and liners, etc.

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Treads, rollers, racks, pinions and teeth . . . to fit all standard shovels.

CHAIN AND SPROCKETS
150 standard chains listed in new KENSINGTON Catalog plus many special chains. All of wear-defying Kenkrome.

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Model_____ NO. TRACKS PER BELT_____ WIDTH OF GROUSER_____

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CITY_____ ZONE____ STATE_____

American Institute of Mining Metallurgical and Petroleum Engineers Meets in New York

growing importance of nonmetallic minerals is stressed

Carl E. Reistle Jr. (left), vice-president, Humble Oil & Refining Co., Houston, Tex., the new A.I.M.E. president, is congratulated by his predecessor, H. DeWitt Smith. Mr. Reistle was installed at the annual A.I.M.E. meeting in New York.

Another ON THE SPOT Report

WITH a registration of more than 3,200, the American Institute of Mining and Metallurgical Engineers held its 1956 Annual Meeting in New York at the Statler and New Yorker Hotels. Starting on Sunday, February 19, the technical sessions continued through Thursday, February 23, and brought together for discussion of progress and problems of the mining and mineral industries, prominent mining engineers, geologists, mineral economists, and industrialists from coast to coast in the United States and from other countries. Founded in 1871, the Institute now has close to 24,000 members.

Reflecting the changes taking place in the relative importance of the various branches of the mining industry, a resolution was passed at the general business session changing the name of the organization to American Institute of Mining, Metallurgical and Petroleum Engineers. The well-known abbreviation AIME, however, is being retained.

Sandford S. Cole, retiring chairman of the Industrial Minerals Division.

Henry DeWitt Smith, president of the Institute, presided at the welcoming luncheon and at the general business meeting. He was succeeded as president by Carl E. Reistle Jr. During the meeting Mr. Smith was presented with the Charles F. Rand Gold Medal "for distinguished achievement and inspired leadership in the administration of all phases of the mining industry at home and abroad, in peace and in war, throughout a long and distinguished career."

The guest speaker at the welcoming luncheon was Jesse C. Johnson, director of the Atomic Energy Commission's division of raw materials. In his address, *The Romance of Uranium,* he said that the free world's uranium reserves have increased to a point where there is ample to supply the uranium requirements of the currently projected military and power programs. He said: "Under the stimulus of military requirements the uranium industry is approaching a $500,000,000 a year business. The real market will come with the development of atomic power." Mr. Johnson added that uranium prospecting has attracted more people, including some without mining experience, than any other mining excitement since the 1849 gold rush to California. Probably more prospectors and small operators have made fortunes or sizable stakes during the eight years of the uranium program than in any similar period since the gold rush days.

Mr. Johnson stated that the United States and Canada each soon will be producing more uranium than was expected from the entire free world only a few years ago. The Blind River, Ontario, region just north of Lake Huron is one of the great uranium fields of the world. By the end of 1956 ore will probably be milled at the rate of 7,000 tons a day in that area, and by the end of 1958, between 25,000 and 30,000 tons a day. Ore reserves are already estimated at 100 million tons and several times that quantity may be found.

The guest speaker at the luncheon sponsored by the Industrial Minerals Division of the Institute was Evan Just, vice-president, Cyprus Mines Corporation and former editor of the *Engineering and Mining Journal.* The subject of his address was *Why I Like the Industrial Minerals Field.* He declared that he believed that to become a technical specialist or a technically backgrounded operator in such fields as cement, aggregates, metallurgical limestone, phosphate, asbestos, potash, salt, clay, lithium,

R. B. Ladoo, consulting engineer, Boston, the new Industrial Minerals Div. chairman.

as modern as they come...

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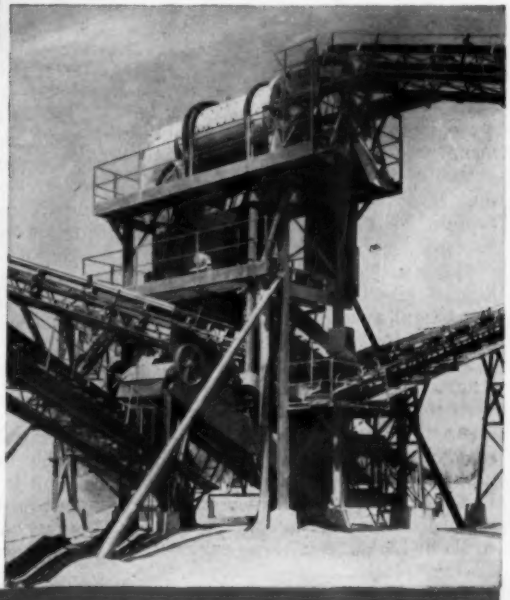
New Plant of L. Romano Construction Co., East Providence, Rhode Island, processes 200 tons per hour of washed aggregate—sand, and 3 sizes of gravel all under 1½″ and stockpiled. Telsmith designed the plant, and built the machinery. Send for Telsmith Complete Plant Service Bulletin 278.



Crushing Plant (*above*)—Plus 4″ gravel goes to a 18″ x 32″ Telsmith Jaw; plus 1½″ gravel to a 36-S Gyrasphere Crusher; the scalper is a 4′ x 12′ Telsmith 2-deck Vibro-King. **Washing Plant** (*right*) has a 72″ Telsmith Super-Scrubber; two 4′ x 12′ Telsmith 2-deck Vibro-King rinsing-sizing screens; 24″ x 20′ Telsmith Twin Screw Sand Classifier.

Many Features of Modern Design— In this plant both Telsmith Crushers are high capacity, low maintenance machines. The large-capacity Telsmith sizing screens have spray bars on every deck. The extra heavy-duty Telsmith Super-Scrubber takes out the clay as well as soft stone, assuring top quality aggregate always. Send for Telsmith Bulletin 266.

D-20

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diamonds, mica, or feldspar would have real appeal and opportunities for talented young people. He reminded his hearers that the dollar value of industrial minerals annually produced in the United States is considerably in excess of that of the metals, that the cement industry is larger that the iron ore industry, that the stone industry is larger than the copper industry, that sand and gravel exceed zinc in value, that clay is close to lead, and that sulphur, lime, salt, phosphate, and potash are all greater than gold, which follows lead in value.

In referring to the wide ramifications of the industrial mineral industry he said: "If you are interested in fundamental contributions to industrial activity, consider where modern industry would be without sulphur, salt, cement, aggregates, limestone, refractories, and abrasives.

"If interested in better living, remember not only the industrial necessities mentioned above but also the contribution made by glass, gypsum, feldspar, mica, asbestos, fluorspar, and vermiculite.

"If interested in basic needs for human growth, whether industrial or pastoral, free or regimented, what is more fundamental than salt, fertilizer, refractories, lime and construction materials?"

At the business meeting of the Industrial Minerals Division the chairman, Sandford S. Cole of the Titanium Pigment Division, National Lead Company, handed over the reins of office for the coming year to R. B. Ladoo, consulting engineer, Boston, Mass.

From among the many papers presented at sessions of the Industrial Minerals Division the following are of particular interest to readers of PIT AND QUARRY.

Quality Control in the Selective Mining of Magnesite at Gabbs, Nevada by Conrad Martin and H. P. Willard, of Basic Refractories, Inc., Western Division, described how several grades of magnesite could be selectively quarried from a deposit in which it was practically impossible to distinguish visually the various grades of magnesite from each other and from the associated dolomite. The deposit described is owned by Basic Refractories, Inc., Cleveland, Ohio.

The magnesite, interfingered with dolomite, comprises a zone 400 ft. thick near the top of a thick deposit of dolomite. The general dip is usually less than 40 degrees. The deposit is folded and faulted and is intruded by igneous dikes and sills. Silicification of the magnesite has occurred near some of the igneous rock, and the lime content increases near faults and folds. The silica may be present as tremolite or it may occur as a soft powdery complex magnesium silicate along fault planes and dikes. It may constitute over 4 percent of the magnesite in places but in the better grade of magnesite it may be below 2 percent. The lime content ranges from about 1 percent to that of dolomite.

Five grades of magnesite are being mined, and although a substantial amount of high-lime material is being used, the main efforts are directed to producing a product containing less than 2 percent silica, 2.6 percent lime, and 2 percent combined iron and aluminum oxides. To accomplish this the height of the quarry benches is limited to 10 ft. and blast holes are drilled 12 ft. deep on a 6½- by 6½-ft. square pattern. The cuttings from each of the blast holes are analyzed for lime and acid insoluble matter. The analyses are plotted, and contour lines are drawn through points of equal lime content. The contour intervals correspond to the various grade limits. The several grade limits are represented by contour lines of different colors. A second set of contours representing the silica content is then superimposed on the first. Any particular grade of magnesite can then be delineated by following the colored area representing the lime limits to the points where it is bounded by contours representing the silica limits.

A rectangular 20-ft. co-ordinate grid is next plotted on the chemical contour map. After a bench is blasted, this grid is staked out on the broken rock. With the map and stakes as guides, the boundaries of the broken rock of various grades are outlined with colored flags for the guidance of the shovel operator, and thus selective removal of the various grades of magnesite, and at the same time some blending, is made possible.

C. F. Clausen, Portland Cement Association, Chicago, who also participated in the panel on cement-aggregate reaction.

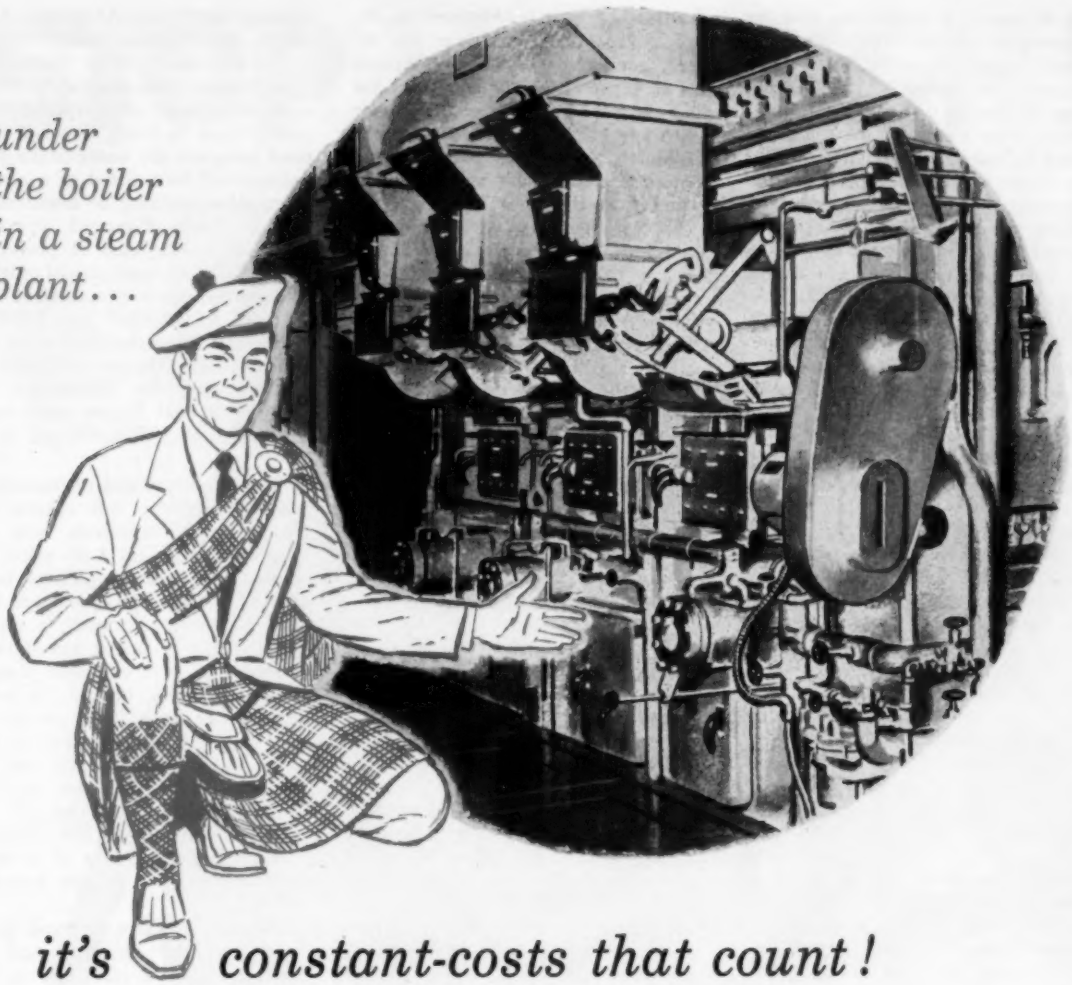
R. A. Wyman, of the Industrial Minerals Division, Mines Branch, Ottawa, Canada, in his paper *Flotation of a Canadian Kyanite* gave the results of his work (on a pilot plant scale) on the recovery of a high-grade kyanite product from the kyanite schist of the Sudbury, Ontario, area. Using an alkaline circuit instead of the acid circuit usually employed in floating minerals of this nature, and with low sodium carbonate and sodium silicate addition, and using 2 lb. per ton of oleic acid, he recovered 87.4 percent of the kyanite and made a product consisting of 95 percent kyanite. On a subsequent pilot-plant basis, using several tons of material, it was proved that the kyanite could be floated to grades of 94 percent or better, with recovery of at least 85 percent, using feed prepared by crushing and dry rod-milling, followed by screening and magnetic separation. It is believed that no difficulty would be encountered in making similar recovery and grade on a plant scale. Details of the pilot plant operation were given.

Lightweight Aggregate, Present and Future by Allen R. Rowen, Dwight-Lloyd Division, McDowell Company, Inc., Cleveland, Ohio, discussed the growth of that industry. Although lightweight aggregate has been utilized for many years, its use in large quantity by the construction industry has come about only since the end of World War II, and mostly within the last five years.

At present the largest market for lightweight aggregate is in the production of concrete building blocks. In 1947 the total number of lightweight blocks, in 8- by 8- by 16-in. equivalents, was 460,000 units. By 1954 this figure has increased to 950,000,000 units and a conservative estimate indicates a 2,000,000,000 unit year by 1974. Assuming an average production of 75 blocks per cubic yard, the use by the block industry of all kinds of lightweight aggregate in the three specified years would be 6,150,000, 12,650,000, and 26,750,000 cu. yd., respectively.

Not all of the lightweight aggregate used is of the manufactured type; much consists of cinders and blast-furnace slag. However, the sup-

under the boiler in a steam plant...



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ply of cinders is dwindling, and the percentage of manufactured lightweight aggregate used in block manufacture is increasing. In 1947 less than 20 percent of lightweight blocks made were composed of manufactured lightweight aggregate. By 1954 the figure was over 27 percent; and assuming that the cinder supply continues to decline, the market for manufactured lightweight aggregates by 1974 will be 70 percent of the total lightweight yardage, or 18,725,000 cu. yd.

The next-largest use for manufactured lightweight aggregate is in structural concrete. In this industry the great advantage in using it is the resultant saving in weight and the consequent reduction in structural steel. Another important market under development is its use in bituminous road concrete. Present studies show that a highly skid-resistant surface can be obtained by adding lightweight aggregate to the bituminous mix. It also prevents creep of road surface. Future growth of the lightweight aggregate industry will depend on its ability to formulate product standards, and improve its general technology.

In his paper *Lime, the Giant of the Chemical Industry* R. W. McAllister, consultant, Arthur D. Little Inc., Cambridge, Mass., dealt with the importance of lime as a chemical raw material. Present consumption is over 11,000,000 tons annually, which is by far the largest tonnage of any chemical raw material. Lime owes much of its acceptance to its low cost; it is the lowest-cost chemical on an equivalent reactivity basis. It is rarely replaced by other chemicals, whereas replacement of other chemicals by lime is common. It has five major outlets—in the manufacture of paper, alkali, steel, and calcium carbide, and in water treatment.

Lime performs a wide variety of services for these and other industries. It is expected that the chemical markets for lime will expand at the rate of from 150,000 to 200,000 tons per year for the next several years. New developments include stabilized refractories made from lime. There is also the rediscovery of the value of lime as stabilizing material for building roads from clay soil. The lime industry itself is taking a much more active interest in developing uses for lime.

Production of Feldspar — Quartz Glass Sand from the Kansas River by Frank W. Bowdish gave details of how relatively impure sand from a deposit in the Kansas River near Kansas City was beneficiated to the point where it could meet the requirements of a local fiber-glass plant for 200 tons per day of sand for the making of glass wool. Previously pure silica sand and feldspar were obtained separately from distant points at considerable cost and were blended at the plant.

The sand, which consists mostly of silica and feldspar grains plus clay, is first passed through a hydraulic classifier, where the clay and most of the iron oxide are removed. It is then stored in a stockpile, from which it is taken to a dryer. The sand is then closely sized and passed through magnetic separators to remove enough of the remaining iron to meet the iron specification imposed by the glass plant. The proportions of silica and feldspar are maintained within the desired limits by close screening, as it was found that the quartz and feldspar grains differ sufficiently in size to permit proportioning by combining the products of different screens.

A symposium on *Industrial Water* —the first in the history of the Institute—was held by the Industrial Minerals Division in recognition of the serious problems engendered in many parts of the country by growing shortages of supplies of suitable water for domestic use, industry, and agriculture. This symposium, which was the subject of a recent report by a Presidential Advisory Committee, created a great deal of interest. It included papers by university professors, U. S. Bureau of Mines officers, and consulting engineers. Their papers covered the following topics: ground-water resources in various parts of the nation; surface-water resources; the treatment and reclamation of waste waters, including sewage; and saline water conversion. The vast thirst of industry was illustrated by the facts that 65,000 gallons of water are required to produce one ton of steel, 22,000 gallons to produce one ton of synthetic rubber, and 8,200 gallons to produce one ton of sulphur.

Former President Truman's Materials Policy Commission estimated that our water requirements will increase from 185,000,000,000 gal. a day in 1950 to 350,000,000,000 gal. a day in 1975.

The development of supplies of ground-water for industry by the artificial recharge of off-quality river water into the ground, its methods and costs, were discussed. Ground-water is premium water since it is cool and clean and requires no treatment. Along a number of rivers, including the Ohio, Allegheny, Mississippi, and Missouri many sites can be found where large permanent, ground-water supplies can be developed by means of a special technology that is being developed. In most instances the water-bearing formation will be utilized as a natural filter plant, needing no maintenance or chemicals. Principal operating cost will be the cost of power for pumping. Cost, exclusive of pipelines and powerlines is estimated at from $25,000 to $30,000 per 1,000,000 gal. a day along the Ohio river, and as low as $15,000 per 1,000,000 gal. a day along the Mississippi. The lower unit coal figures apply to installations of 10,000,000 gal. a day or larger.

The treatment and reclamation of waste waters by the mining and metallurgical industries was discussed. Insufficiency of water has made these industries pioneers in this field. The techniques used are those with which the industry is already familiar; they include gravity separation, filtration, chemical flocculation, neutralization, and the activation of sludges. The phosphate industry requires enormous quantities of water. One big problem is the removal of slimes from the wash water, which if discharged into streams will kill fish life. This fact has led to the removal of the slimes and reclamation of the water for re-use.

Several speakers referred to the fact that the cheapest and best source of industrial water is often sewage effluent. Water which has already gone down the drains of the family sink is frequently softer and more desirable for industrial use than normal city water, partly because softeners and conditioners have already been donated by housewives. Sewage effluent is normally treated by cities, and the additional cost for treating it for industrial use is usually a minor item. The huge Sparrows Point mill of Bethlehem Steel Company near Baltimore, and the Texaco Oil Refinery at Amarillo, Texas, are examples of companies that have found the use of effluent profitable.

Research into the demineralizing of saline water has been stimulated by the growing incidence of water supply problems over the country during the last decade. In 1952 a research program was initiated by the Department of the Interior to find and develop technically and economically feasible means of demineralizing saline water — both brackish and oceanic. In the last

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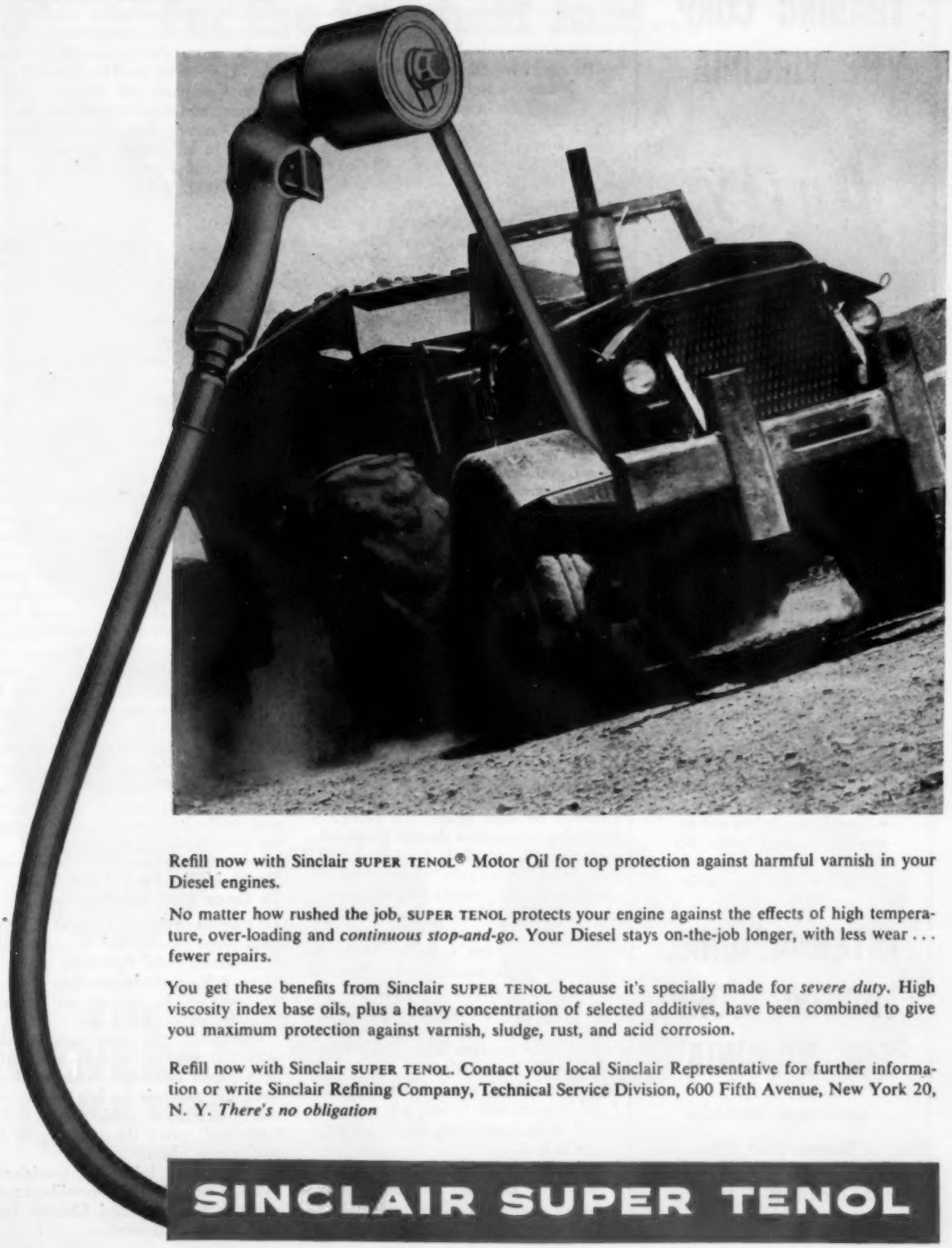

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session of Congress, the program was extended through 1963, with funds totalling $10,000,000 for the 10-year period. Among the more promising processes under investigation are those utilizing ion-transfer membranes, a variation of vapor compression distillation, and extraction in the super-critical state.

Processes for converting saline water to fresh water are in operation in Bermuda, Gibraltar, Dakar, and other places where fresh water is very scarce; but the major obstacle to more widespread use is the cost, which, in the case of chemical desalting is about $1.15 per 1,000 gal. Research is being accelerated by industry and at research and academic institutions.

A feature of the sessions was a panel discussion on *Cement-Aggregate Reaction*. This was sponsored by the committee on Cement, Lime, and Gypsum, and was organized by T. D. Murphy, chairman of the committee. Those taking part were Katharine Mather, U. S. Corps of Engineers; Levi S. Brown, Portland Cement Association; Robert G. Pike, National Bureau of Standards; L. J. Minnick, G. & W. H. Corson, Inc., Plymouth Meeting, Pa.; J. A. Ames, geologist, Baltimore & Ohio Railway; and E. M. Barker, Calaveras Cement Company. The moderator was C. F. Clausen, Portland Cement Assn.

It was considered that where unfavorable reactions in concrete occurred, they were between soluble silicates in the aggregate and the alkalis in the cement. Among the undesirable constituents in aggregates are volcanic glass, opal, tridymite, cristobalite, chalcedony, and some types of chert. To keep out of trouble, the alkali content of cement should be kept below 0.6 percent; reactive aggregates should be avoided; or, if low-alkali cement is not available in an area where reactive materials are present in the aggregate, a part of the cement should be replaced by a very finely divided reactive pozzolan material, such as fly ash, which would use up the alkali. Much research is proceeding on the alkali-aggregate problem, but no one explanation of the mechanism of the reaction is yet universally accepted. Paradoxically, an aggregate containing much reactive material appears safe to use, whereas one with only a relatively small proportion is bad.

Another symposium held by the Industrial Minerals Division was on *Air Separation of Nonmetallic Ores*. This symposium was proposed by producers of mineral pigments who invited manufacturers of air classification equipment to answer a number of questions about the separation of pigments in the size range of 10 to 3 microns. These manufacturers accepted the invitation and presented papers containing information on the latest developments in this field. They were the Hurricane Pulverizer Company, the Sharples Corporation, and Alpine A. G. of Augsburg, Germany. Fine particle classification in air has to date been less costly, but also less efficient, than in water. Now, thanks to recent improvements, air classification can equal or better that in water, the manufacturers claim. However, special consideration is advisable for each job. Machines were described which can classify talc, limestone, silica, and other nonmetallics down to 1 micron or less. Machines with capacities of 2 tons per hour of this fine material are now available.

The concluding session of the meeting dealt with the topic of mineral synthesis and reviewed progress being made in the production of synthetic mica, synthetic quartz, and various other synthetic crystals, which, because of their perfection and freedom from undersirable constituents, seem destined to replace natural crystals for a number of purposes. Production of these crystals already has a value in excess of $5,000,000 per year and should increase rapidly. Synthetic mica is about to go into commercial production, and the production of synthetic quartz is approaching a commercial basis. Synthetic crystals of lithium fluoride, calcium fluoride, sodium chlorides, cesium bromide and other similar materials are already available. These synthetic crystals provide important new tools for process controls and for research in many fields.

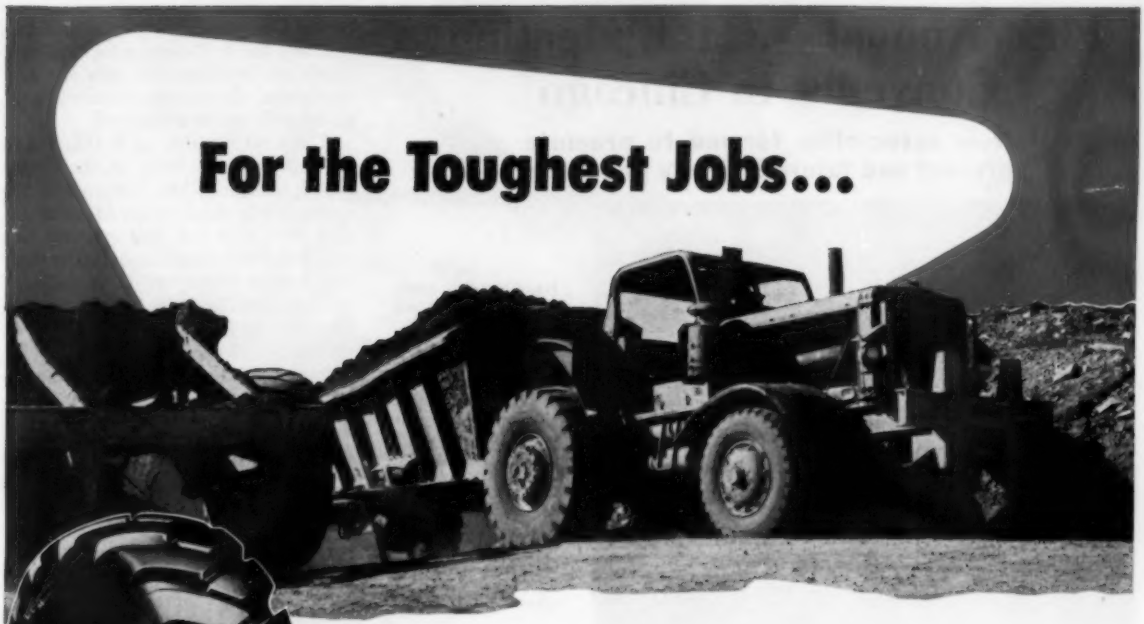
North Little Rock Sand Co. To Open $125,000 Facility

Operations in the new $125,000 sand plant constructed by the North Little Rock Sand Company at Rose City, Ark., will begin this spring. Products will be washed and graded sand for construction use.

Officials of the plant predict that over 400 tons of sand an hour will be pumped from the Arkansas river once the plant is in full operation. An 8-in. pipeline laid from a 40-ft. barge will carry the sand 1,300 ft. to the new plant.

Officers are John Ott, president; W. F. Tracy, first vice-president and general manager; and Charles Imhoff, secretary-treasurer.

For the Toughest Jobs...



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Unexcelled for strength with *exclusive* Nygen Cord, and for ideal crawler-like traction and flotation, The General Tire makes every off-the-road job show a profit. Built big, broad and rugged, they provide utmost protection against job hazards . . . keep units consistently on the move to get jobs done faster.

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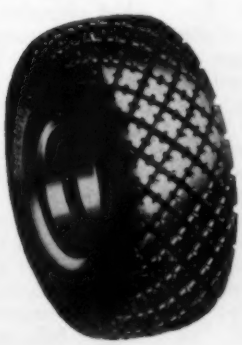
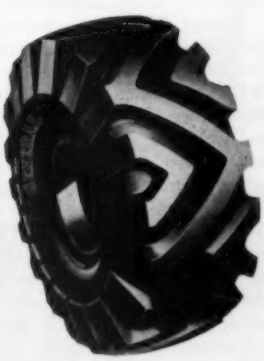


General Earthmover



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THE GENERAL TIRE & RUBBER COMPANY • *Akron, Ohio*

SPECIFY GENERALS ON YOUR NEW EQUIPMENT

First Annual N.C.L.I. Meeting Convenes in Chicago

New association formed to promote present and future highway programs

Heading the newly formed N.C.L.I. are (left to right): Taisto Laine, Hanna Coal Company, Adena, Ohio, treasurer; Robert M. Koch, Washington, D.C., executive vice-president; Joseph J. Griesemer, Griesemer Quarry, Springfield, Mo., president; and C. A. Broecker, Newton County Stone Company, Kentland, Ind., first vice-president.

Another ON THE SPOT Report

THE National Crushed Limestone Institute, a new and vigorous group of aggregates producers, held its first annual meeting on February 16, 1956, at the Sheraton-Blackstone Hotel, Chicago, Ill. This 3-month-old organization was formed for the primary purpose of insuring the passage of a suitable highway bill at this session of Congress and to help promote similar legislation in the future. It is an entirely independent group, not connected with any other association. At this meeting bylaws and other business matters were discussed and new officers were elected to replace those who had served temporarily since the formation of the association.

Robert M. Koch, executive vice-president, gave a brief resume of the formation, history, and purposes of N.C.L.I., which was incorporated on November 28, 1955. Its history actually began, however, at the January, 1955, convention of N.A.L.I., when the possibility of providing crushed stone service to its members was explored. He also told of discussions with a committee of the National Crushed Stone Association on the possibility of some joint arrangement to provide such service; no agreement was reached.

At the June N.A.L.I. board meeting, said Mr. Koch, it was decided to take a member vote on whether or not crushed stone service was needed. The result was about 4 to 1 in favor of such service. The next step was a decision to provide only those types of service not available elsewhere—specifically, direct lobbying in Washington. It was later decided to make this an entirely separate and independent association, and incorporation followed. It was decided at this meeting to pattern the bylaws temporarily after those of N.A.L.I.

The membership, said Mr. Koch, was 162 on the day of the meeting and it is growing rapidly. The organization is composed at present largely of N.A.L.I. members—only 17 of the 402 total do not produce crushed stone. Membership in N.C.L.I., according to Mr. Koch, is open to all producers of aggregates.

As soon as the association was established, work was begun on its chief objective, the promotion of a suitable national highway program. There is, Mr. Koch stated, no other association or group which is lobbying with the rank and file of congressmen; the others are concentrating on the Congressional Committee charged with the development of a program. It was found that many congressmen were unfamiliar with the details of the road program and the role that aggregates will play in it. The job, said Mr. Koch, is to sell the 435 congressmen who will vote on the bill; the association will do this in Washington, and producers should contact their congressmen.

It was brought out in the ensuing discussion that during the 10- to 15-year life of this highway program there will be many problems for N.C.L.I. to work on. The bill now before Congress is only an authorization bill for a 13-year program, and funds are available for only the first two years. Every two years the program will be re-examined.

The next meeting of N.C.L.I. will be held June 6, 1956, at the Chase Hotel, St. Louis, Mo. Because of the considerable duplication of membership with N.A.L.I. this meeting was scheduled to follow immediately their mid-year meeting on June 4 and 5 at the same location. The next annual meeting of N.C.L.I. will be at the Statler Hotel, Washington, D. C., January 24-25, 1957, immediately following that of N.A.L.I. on January 20, 22, and 23.

Officers and Directors New officers and some new directors were elected at this meeting. In selecting them every effort was made to choose men who were not officers of N.A.L.I., in order to establish the separate entity of N.C.L.I. The new officers are as follows: president, Joseph J. Griesemer (Griesemer Quarry, Springfield, Mo.); first vice-president, C. A. Broecker (Newton County Stone Co., Inc., Kentland, Ind.); executive vice-president, Robert M. Koch, Washington, D. C.; treasurer, Taisto Laine (Limestone Plant, Hanna Coal Co., Cadiz, Ohio); secretary, Thomas B. Stafford (Vermont Marble Co., Proctor, Vt.).

Members of the executive committee, in addition to Messrs. Griesemer and Broecker, include the following: W. L. Bryan (Bryan Rock Products, Shakopee, Minn.); Buford V. Everett (Everett Quarries, Inc., Plattsburg, Mo.); L. R. Falk (L. R. Falk Construction Co., St. Ansgar, Iowa); W. O. Faylor (Faylor Lime & Stone Co., Winfield, Pa.); Paul Frank (Paul Frank, Inc., North Vernon, Ind.); J. B. Mount (Maymead Lime Co., Shouns, Tenn.); Robert M. Patton (New York Coal Co., Columbus, Ohio); John H. Riddle (Riddle Quarries, Inc., Salina, Kans.); E. B. Snead (Texas Crushed Stone Co., Inc., Austin, Tex.).

The following regional vice-presiwents were named: Thomas E. Lalley (Bradford Hills Quarry, Inc., East Petersburg, Pa.); Arthur Overgaard (Arthur Overgaard Co., Elroy, Wis.); J. F. Pace (J. F. Pace Construction Co., Glasgow, Ky.); Earl Thomas (T & O Lime & Rock Co., Sedalia, Mo.); Paul E. Thompson (Servtex Materials Co., New Braunfels, Texas).

The board of directors numbers 50, including the officers and the members of the executive committee. The

(*Continued on page* 158)

LORAIN-72

REPORT

from Valley Dolomite Corporation

LORAIN-72 FEATURES

- **TURNTABLE FEATURES**... 3-shaft turntable design — permits simultaneous hoist, swing and travel • High-efficiency, double center drive power transmission • Torque Converter power take-off available • Hoist Drums on anti-friction bearings • Metered Air controls for hoist, crowd, retract, travel, boom lowering and derricking available.
- **BOOM FEATURES**... 30-ton crane, clamshell, dragline, hoe • Independent chain crowd shovel • Full manganese shovel dippers • Air power controlled dipper trip • Air crowd brake also available.
- **CRAWLER FEATURES**... 2-speed chain driven crawler (¾ and 1½ MPH) • All crawler propelling mechanism and steering mechanism run in oil bath in oil-tight housing • Full air power crawler steering • 4-way tread-travel lock • Full air power control of tread-travel locking pawls... also available for travel-crowd jaw clutches.

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VALLEY DOLOMITE CORPORATION

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The Thew Shovel Company
Lorain, Ohio

February 3, 1956

Gentlemen:

This will give you performance information in regard to our Lorain-72 shovel.

It works one shift of approximately 7-1/2 hours per day, 5 days per week throughout the year. It is equipped with a 1-1/2-yd. dipper and is our first shovel to be equipped with a Torque Converter and Metered Air.

This is the fourth Lorain shovel which we have purchased and all of them are still in excellent operating condition. We started out with an L-75D with 1-1/4-yard dipper in early 1937. In 1941 we added an L-79 with 1-1/2-yard dipper. In 1950 a model Lorain-820J with a 2-yard dipper was purchased and finally last September the new L-72.

We are at present operating all four of these machines on both open pit quarry rock work as well as stripping.

Yours very truly,

[illegible]
Vice President

N.S.G.A. Convention

(*From p.* 107)

M. D. Kerr (American Aggregates Corp.) reported that this problem apparently resulted from the following causes: overloading of the screen, incorrect wire size (in his experience lighter wire resulted in less blinding), angular particle shape which causes lodging, operating flow of the particular screen, and screen speed.

With respect to keeping conveyor belts clean, the installation of a spray bar below the head ends of conveyors was reported to be effective. To this installation was added a chute for catching spillage.

Abrasion-Resistant Materials An informative presentation of wear and abrasion problems was made by William L. Price (Dravo Corporation) in a paper entitled *Abrasion Resistant Materials used in Sand and Gravel Production*. Mr. Price's co-author is Donald H. Marlin, also of Dravo. It was stated that a safe presumption would be that 75 percent of a producer's maintenance dollar is accounted for by combatting abrasive wear of chute work and processing equipment. It was suggested that this would indicate that maintenance engineers should investigate the cause and effect of wear more intently and not pursue the policy of mere renewal of worn parts. Mechanical wear was divided into two categories —impact, in which a particle strikes a surface at approximately right angles; and abrasion, resulting from particles moving parallel to the wearing surface. It was pointed out that with very few exceptions, wear problems are a combination of these two factors.

Although small particles are not generally considered to produce impact loads, a sand particle striking a surface at right angles while traveling 60 f.p.s. can actually develop a surface stress of 100,000 p.s.i. due to impact. The abrasion problem was divided into two types: high stress—such as that resulting from the crushing action of a gyratory crusher; and low stress—as exemplified by the action of sand sliding down a chute. In discussing the relationship between the hardness of various metals and the range of hardness for the different materials generally found in sand and gravel deposits, it was stated that tests have shown hardness of sand and gravel particles to exceed the average Brinell hardness of structural steel.

To complete the picture of wear-resisting materials, the use of rubber in liners and molded shapes, such as in pump parts, was discussed. It was pointed out that rubber resists wear in a different manner from that of metals, and that it is used with the idea of having a surface that will "roll" with a blow instead of presenting a surface harder than the materials being handled. The general theory of rubber application was stated to be the selection of softer rubber for impact locations and harder rubber for abrasion. It was added, however, that the present trend is toward elimination of soft rubber in applications over ½-in. in thickness and the use of hard rubber there for impact as well as for abrasion resistance. Nevertheless, it was said, if rubber linings are not prescribed of sufficient thickness to resist tearing, they will not last as long as the same thickness in steel.

The subject of hard-facing was also discussed, and it was stated that cost savings can be effectively obtained by the correct procedure, since it provides a means for surfacing a casting, for example, of relatively inexpensive metal with a surface layer of abrasion-resistant material, and also allows the reclamation of a worn structure as opposed to replacing the entire unit.

In concluding, the point was made that there is no test which will perfectly predict the service life of abrasion-resisting materials for all applications, nor is there any one material which will give optimum wear resistance for all conditions.

Exploration of Deposits Sampling of sand and gravel in place involves what is probably the most difficult type of exploratory drilling, according to a discussion by R. W. Wilson (Pennsylvania Drilling Co.), who presented a paper on *Exploration of Sand and Gravel Deposits*. Among many methods used, the following have predominated: test pits, pipe driving, suction pumps, reverse circulation (in which water used holds the wall of the drill hole), augers, and double tube barrels. The latter, a new development of the Pennsylvania Drilling Company, has proved most effective in this company's operations, Mr. Wilson stated.

Further comments, accompanied by a series of colored slides showing drilling operations, described the use of the double tube method, in which the outer tube, or barrel, maintains the hole wall while the inner barrel retrieves, similarly to coring, a vertical section of the deposit.

SPECIFICATIONS, BALLAST, PAVEMENTS

Aggregate Specifications A *Review of Progress in Aggregate Specifications and Test Methods* presented by Stanton Walker (N.S.G.A. and N.R.M.C.A. director of engineering) highlighted the current trends in aggregate specifications covering size and grading and the soundness, durability, and flexural strength of the concrete in which they are used. He pointed out that while the matter of coarser aggregates has already received considerable attention and study, the uniform grading of fine aggregates is currently under close consideration. As an example, A.S.T.M. C 33 was referred to where sieve retention percentages, fineness modulus, and uniformity (within a fineness modulus range of not more than 0.20 from the value assumed in selecting concrete proportions) were established.

On the subject of the soundness of concrete aggregates, it is Mr. Walker's belief that many of the uncertainties of the various "soundness tests" are being resolved by testing the aggregates in concrete subjected to freezing and thawing. However, he stated, these procedures are in the development stage and dependence on the sodium or magnesium sulphate test will continue for a while. On the matter of chemical factors affecting soundness and and durability, it was reported that the current A.S.T.M. approach is to warn against the use of reactive aggregates (such as those containing siliceous constituents) unless cement containing less than 0.6 percent alkalies is used or unless there is added a material that has been shown to inhibit undue expansion due to the aggregate-alkali reaction.

A recent trend toward specifying concrete, such as in airport runways, on the basis of flexural strength was reported. A possible beneficial result for the sand and gravel industry from the emphasis on flexural strength was stated to be the recognition that maximum sizes of coarse aggregates smaller than customarily used may have merit.

Also pointed out was the trend in the bituminous field of evaluating aggregate shape and angularity on the basis of performance instead of arbitrary specification of percentages of crushed particles. In concluding, Mr. Walker suggested that the specifications and materials engineers of state highway departments or other similar offices are hard working and conscientious, and deserve

BUCYRUS-ERIE CHURN DRILLS

FOR LONG-RUN DRILLING ECONOMY

Cost records of many experienced quarry operators show that in some types of formations Bucyrus-Erie churn drills put down blast holes far more economically than any other type of drilling equipment.

Swinging heavy tool strings up to 6000 pounds, these drills have the punch needed to lick stubborn formations. Whatever type of power you select—gasoline, diesel or electric—you get a big heavy-duty power unit that easily handles the tool load. Efficient power application keeps fuel or current consumption low.

Bucyrus-Eries are built to take the shock of rock drilling in stride, too. Tough rubber discs in the derrick head put snap into the drilling motion and absorb shocks before they reach machinery. Rubber insulated spudding beam and heel sheaves further dampen the vibrations of drilling. The drilling machinery is supported by an all-steel, all-welded box-type frame that insures perfect alignment, low maintenance, long life.

Team up all these advantages with full mobility and easy control and you've got a rig that can't be beat for productivity and dependability. Four models to choose from: 50-T, for 9- to 12-in. holes; 29-T for 6-⅜- to 9-in. holes; 27-T, for 6- to 6-⅝-in. holes; and 22-T, for 5-⅝- to 6-⅝-in. holes. Write today for complete information on the model of your choice.

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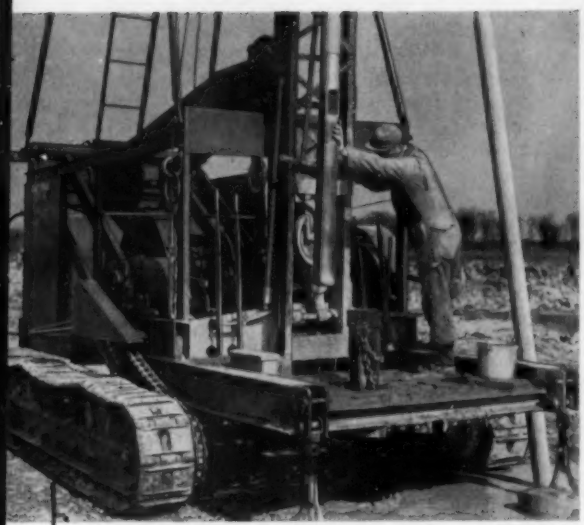

Small initial cost plus low upkeep combine to make Bucyrus-Erie churn drills ideal for many quarries. This 27-T drills 7-in. hole for National Lime and Stone Co., Marion, Ohio.

At Lowell, Vermont, a 29-T drills 6-in. holes in serpentine rock. Average hole depth is 100 feet.

BUCYRUS ERIE

South Milwaukee, Wisconsin

76th Year of Service to Men Who Shape the Earth

sympathetic co-operation from the industry.

Railroad Ballast In opening remarks of his paper on the *Properties of sand and Gravel for Railroad Ballast*, Rockwell Smith, Research Engineer Roadway, American Association of Railroads, stated that in 1952 (the latest year for which ICC statistics are available), the Class I line haul railroads expended approximately $50,000,000 on ballast. This was suggested to indicate a potential market of sufficient size to be interesting. A description of the functions which ballast must provide was accompanied by the statement that it is very apparent that sand and gravel will fulfill all the requirements.

Mr. Smith stated that the use of sand and gravel for ballast purposes has recently declined due to two factors: an apparent depletion of natural supply in many parts of the country, and a swing away from its use on high-speed traffic main lines. It was suggested that the latter trend would be of concern to the sand and gravel industry, but that it would be feasible to reverse that trend by tailoring a sand and gravel product to fit the conditions under which it will be used. The responsibility for the slipping of this market falls both on the railroads, which, the speaker commented, have always regarded sand and gravel as a natural product with crushing of oversize as the only treatment necessary; and on the industry in failing to interest the railroads in the quality obtainable in a manufactured product. In stating that for the railroad market the price and service must be competitive with alternate types of ballast materials, it was added that in this connection the cost basis appears favorable to this industry.

Mr. Smith indicated that the present series of tests run by the A.A.R. have pointed the way toward a more complete study of the effect of particle shape, gradation, crushed particles, and fines on the stability of roadbeds. It is his belief that sand and gravel ballast can be produced that will equal any material in service, and probably at a lower cost.

Fine Aggregate During N.S.G.A.'s final individual session, R. P. Lottman, research fellow studying at Purdue University under the association's fellowship grant, was introduced to the members present. A research paper entitled *Effects of Crushed-Gravel Fine Aggregate on the Strength of Asphaltic Surfacing Mixtures*, which was prepared by him under the supervision of W. H. Goetz, associate professor and research engineer with the Joint Highway Research Project, was presented by Dr. Goetz.

With a number of different fine aggregates furnished from different sections, plus those acquired locally, Mr. Lottman ran a large number of tests on asphaltic surfacing mixtures made up with these materials. The Marshall, A.S.T.M., and Modified A.S.T.M. tests were employed. Results of this research showed that in almost all cases the asphaltic mixtures displayed greater strength with increased amounts of crusher 'dust' included in the fine aggregate. Further, the material obtained by crushing round gravel (material larger than "dust") provided greater strength.

Stone and small gravel sizes had been crushed and used as the sand fraction in a part of the testing, and it was indicated that a blend of plant-run sand with crushed gravel sand proved an economical mixture.

Sawed Joints John E. Burke, assistant engineer of physical research with the Illinois Division of Highways, discussed *Sawed Joints for Concrete Pavements*. He stated that portland cement concrete placed without transverse joints, will remain a continuous ribbon for a very short period of time. Erratic cracks, resulting from temperature and moisture change stresses, will form even before traffic is allowed on the pavement.

Control of such cracks has been attempted with various methods for many years, but the one which seems to be attaining pre-eminence is that of forming contraction joints by sawing. This procedure reportedly not only controlled cracking, but also eliminated the concentration of inferior concrete at joints which resulted from interruption in the placing process, along with the hand operations that often resulted in high or low joints. In addition, most contractors, it was said, believe that postponing the forming of cracks until the concrete has hardened improves the sequence and efficiency of construction operations.

In describing the sawing operation he has noted in Illinois, Mr. Burke stated that, typically, the sawing is accomplished with a single-blade machine. Diamond and carborundum blades have both been used to make the kerf—2¾-in. deep. An interesting and important point brought out concerned the influence that the physical character of the coarse aggregate has on the life of saw blades and the speed of the sawing operation. Cost figures kept on two Illinois construction projects were considered to reflect this effect. Although aggregates in both projects were gravels, one was essentially a limestone gravel and the other a mixture of limestone and hard siliceous and igneous materials. Blade life for the former averaged 1,600 lineal feet of joint per blade, with a sawing cost of 34 cents per foot, while in the latter case blades averaged 700 feet, at 46 cents per foot.

GROUP INSURANCE, RADIO

Group Insurance In reporting to a joint session of the associations on why *The Associations' Group Insurance Plan is a Good Investment for My Company*, William Moore (president, J. P. O'Connell Co.), emphasized that an extremely important point in favor of the associations' plan is the fact that the supervisory board of trustees for the insurance fund is recruited from the ranks of the member companies—men who are known to the entire membership—and that annual audit reports are made on the status of the fund, the details of its operation, and the factual results. For these reasons participating members are not faced with the unfortunate consequences recorded in the irresponsible administration of other trusts.

Mr. Moore pointed out that even the present plan, considered to be the best with respect to the needs of the industry at the lowest cost, could be improved in its scope of coverage and would operate at a still lower figure in direct proportions to the degree that those not now participating join up. It was stated that after three years of operation, more than 3,000 people have come under the plan, with $185,000 paid out in claims—half of this amount during the last year.

Industrial Radio Ernest W. Jennes, Washington, D. C., counsel for the associations, presented a paper describing the eligibility standards for use of industrial radio, a device which is becoming of increasing importance especially to the ready-mixed concrete industry. He stated that the association is conferring with the Federal Communications Commission to explore future changes in the laws governing the use of radio which would permit a greatly expanded use by manufacturers. He emphasized that such use must be of a manufacturing nature rather than of a distributing type, and added that the N.R.M.C.A. had

Quarry Production Up Because . . .

OPERATOR EFFORT IS REDUCED 50%

An excavator, even an American, is only as good as its operator! If he's "beat" after a few hours at balky controls your profits are suffering as much as his muscles. American 300 Series Cranes—like this dragline owned by George W. Parfet Estate Inc., Golden, Colorado—are easy to operate and here's why: Anti-friction bearings in the brake linkage system cut operator effort up to 50%! This means only half as much "push" is needed on the foot pedals. It means faster release with better control when lowering the load. No more sudden stops that jar the entire machine. Heavy duty 300 Series Cranes give top production and bigger profits because they swing and cycle faster —smoother. Trouble-free performance is assured by excellent design—strict quality control from start to finish!

For the whole American story, see your American Distributor. For your job, see his line of American crawler and rubber mounted cranes in capacities from ½-yard up.

AMERICAN HOIST
and DERRICK COMPANY

St. Paul 1, Minnesota

filed pleadings to the effect that ready-mixed concrete is in fact a production in this determination. In contrast, it has been determined that most sand and gravel producers cannot use radio in the *delivery* of the materials they produce.

Geographically, industrial radio can be used only in metropolitan areas of less than 500,000 population. There are at present only 34 such areas in this country, in which areas 40 percent of the population reside. It would appear that there will be no immediate relaxation in this limitation as to geographical use. There are over 60 industries now using radio, and the conflict in interference of the assigned band frequencies will soon make necessary arbitrary allocations to eliminate the discriminatory features of the law.

One acceptable solution to the difficulties of using industrial radio is the relatively new Citizens Radio Service Band of 460 to 470 megacycles. This band has been used in large volume in Chicago, New York, Los Angeles, and a few other large cities, but has not generally been utilized elsewhere. It can be used by the producers of sand and gravel. The equipment is costlier and the effective use range is only about 20 miles, compared with the 40- to 50-mile ranges in the lower bands. Also, the equipment is harder to maintain in the upper bands, and it is spotty in reception.

The final solution to these problems, according to Mr. Jennes, lies in these factors: further technological development in making available "split-channel" procedure with narrower bands; more efficient equipment; more efficient use of present bands; an increasing interest displayed by the F.C.C. in "business" use of radio. He feels that commercial broadcasting interests have been allotted more than they deserve in band areas.

Panel on Radio Following Mr. Jennes' talk, a four-man panel of producers who use various types of radio equipment under varying conditions of terrain discussed the practical aspects of such use, and answered a number of questions from the floor. This panel was composed of the following: M. Eugene Sundt, Albuquerque, N. M.; William J. Hicklin Jr., Jacksonville, Fla.; Joseph Sadler, Richmond, Va.; and Russell P. Mumford, Springfield, Ohio. As most of this discussion was devoted to the use of radio in ready-mixed concrete delivery it will be described in the CONCRETE MANUFACTURER.

Industry Personalities

GEORGE ROSS has been appointed sales manager of the new Edmonton, Alta., Canada, plant of the Inland Cement Company Limited. Mr. Ross will be responsible for the co-ordination of sales and marketing of cement from this plant.

WALTER A. VIEBROCK recently took over duties as manager of the Iola plant of the Lehigh Portland Cement Company, succeeding ROBERT E. JONES, who has been appointed procurement manager at the home office in Allentown, Pa.

Mr. Viebrock has been with Lehigh for eight years, spending the first five with the Metaline Falls plant in Washington and the last three years at Easton.

Mr. Jones goes to Allentown after seven years with the firm at the Iola plant.

CHARLES M. ADAMS and JAMES E. POOLE of the Detroit office of the Huron Portland Cement Company recently received promotions. Mr. Adams, formerly manager of distribution, became assistant manager of operations.

Mr. Poole was promoted to the position of superintendent of vessels. He had served previously as assistant superintendent.

JOSEPH M. BREEN of Montreal, president and general manager of Canada Cement Company Limited, has been appointed a director of Du Pont of Canada Securities Limited and its operating company, Du Pont Company of Canada Limited.

W. ASHLEY GRAY JR., has been named vice-president of the Pioneer Silica Products Company, St. Louis, Mo., according to an announcement released by C. R. Meyer, secretary. Mr. Gray was formerly sales manager of the company.

WILLIAM T. BURNS has been appointed assistant to J. F. Knight, manager of operations, Kaiser Chemicals Division, Kaiser Aluminum & Chemical Corporation.

Mr. Burns was formerly assistant general superintendent of Kaiser Chemicals Division's Salinas, Calif., area plants and previously plant superintendent of the division's seawater magnesia plant at Moss Landing, Calif.

ROBERT C. ANDERSON, assistant chief chemist and inspector at the Hannibal, Mo., plant of Universal Atlas Cement Company, a United States Steel Corporation subsidiary, has been appointed chief chemist and inspector at that plant effective March 1, 1956. He succeeds Hugo E. Koch, who died on February 13.

Mr. Anderson began his employment with Universal Atlas as a tester at the Duluth, Minn., plant in July, 1942, and left in May, 1943, to enter the U. S. Army. He returned to the Duluth plant as a tester in April, 1946, and was promoted to chemist in June, 1951. A year later, he was promoted to assistant to chief chemist and inspector at the Hannibal, Mo., plant. In August, 1953, he was promoted to assistant chief chemist and inspector, a position which he has held until the present.

N.A.L.I. Meeting

(*From page* 136)

Miscellaneous Several producers reported economies in quarry haulage from replacing ordinary dump trucks with specially-designed heavier units. The long-term cost is reported to be considerably lower, and there is less down time. Another producer still considers diesel locomotives the most efficient for his 4-mile haul. Where belt conveyors are used for moving rock out of a quarry to the plant, it is recommended that a nylon-cotton carcass with synthetic rubber be used as this material has the greatest strength and requires fewer plies.

The use of roll crushers was also discussed. One producer reported the successful use of three sets of rolls in series after the primary crusher, the first one corrugated and the others smooth. These are equipped with manganese steel rolls, and grooving is prevented by pancaking the feed. The use of a vibrating pan feeder to spread out the feed was also recommended.

N.C.L.I. Meeting

(*From page* 152)

following four directors were added at this meeting: Keith Hall (Hall & Riley Quarries & Construction Co., Boonville, Mo.); Paul W. Seitz (May Sand & Gravel Corp., Fort Wayne, Ind.); John D. Teeter (John S. Teeter & Sons, Inc., Gettysburg, Pa.); H. C. Wolfe (Wyandot Dolomite, Inc., Carey, Ohio).

"Good-Will" techniques in blasting make good friends and neighbors

Modern blasting calls for the utmost consideration of the homes and businesses that make up a community. The regular routines of life must continue without disruption.

To help you make good friends and neighbors, AMERICAN's engineers have developed many "Good-Will" techniques that help you to reduce noise, vibration and shock to a minimum, and at the same time enable you to achieve maximum blasting efficiency.

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Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

A few weeks ago the writer traveled in several Eastern and Southeastern states, and in the course of these travels conversed with numerous buyers, sellers, manufacturers and processors of nonmetallic material and supplies. In this article I shall review the most important legal questions presented to me by these persons. I shall verify my answers by citations of leading higher court decisions.

Validity of Tariffs

One question was as follows: "Can a common carrier make a valid contract to transport materials at less than the rate fixed by tariffs?"

Modern higher courts consistently hold that the tariffs or schedule of rates established, published, and filed with the Interstate Commerce Commission by a common carrier is legal for determining whether a freight charge is reasonable and valid. Moreover, all higher courts now agree that freight rates and tariffs filed with the Interstate Commerce Commission are the only rates or charges that can be legally collected for transportation and services rendered.

For illustration, in *Howitt v. United States,* 150 Fed. (2d) 82, the higher court explained that if a common carrier is subject to the Interstate Commerce Act, and its rates have been filed with the Interstate Commerce Commission, these specified rates are the only charges that can legally be exacted for the services rendered. Furthermore, although the carrier contracts or agrees to transport materials at lesser rates than specified in the tariffs, the carrier may sue and recover the difference between the rates specified in the contract and the rates fixed by tariffs.

Another important point of law is that a carrier is liable only for the value of lost or damaged merchandise as specified and limited by its tariffs, on file with the Interstate Commerce Commission, although the shipper had no advance information or notification that the carrier's liability was limited.

Liability of Common Carrier

A reader asked this question: "Under what circumstances is a common carrier liable for damage or loss to shipped crushed rock?"

Higher courts consistently hold that a common carrier is liable for all loss of or damage to a shipment of merchandise excepting that which results from (1) the inherent quality of the merchandise; (2) the fault of the shipper; (3) an enemy of United States during war; and (4) an act of God.

In other words, a common carrier is liable practically as an insurer that merchandise and materials accepted for transportation will be safely delivered in good condition.

Must Prove Negligence

This question was sent in recently: "When is the owner of a motor truck liable in damages for injuries not directly caused by negligence of the driver? For example, recently one of our motor trucks killed a cow, which caused the driver of another approaching automobile to run into a pole. Is our quarry company liable to the owner of the cow or the injured automobile driver?"

Unless the driver of your truck was negligent, you are not liable to either the injured automobile driver or the owner of the cow.

For example, in *Garbarino Transfer Company,* 20 So. (2d) 625, the owner of a truck was held liable for the value of the horse which he killed on a highway, because the jury decided that this driver was negligent in striking the horse.

In your case the jury will not hold you liable unless it decides that the collision with the cow and, also, the automobile driver's collision with the pole was directly caused by negligent fault of your truck driver.

Negligence Not Presumed

The operator of a sand and gravel company posed this query: "Our company sells sand and gravel for so much a truck load, and generally the truck drivers do their own loading. A few nights ago a truck driver was found dead, buried in sand. Do you have records of any new law suits that will assist our lawyer to win this suit?"

A higher court held recently that no company is liable in damages for the injury or death of a person un-

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BELT FASTENERS and RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

★ FLEXCO Fasteners make tight butt joints of great strength and durability.
★ Trough naturally, operate smoothly through take-up pulleys.
★ Distribute pull or tension uniformly.
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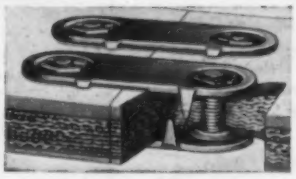
★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



Compression Grip distributes strain over whole plate area

Order From Your Supply House. Ask for Bulletin F-112

FLEXIBLE STEEL LACING CO., 4623 Lexington St., Chicago 44, Ill.

Tournapull wastes 11 yard load in worked-out section of pit. Says Owner Erb, "I like Tournapull's maneuverability."

Strip 2,500 bank yards of overburden daily

at Illinois gravel pit

Successful pit operation throughout the year requires the right machines at the right time to make the most of existing job conditions. These machines have to work during all weather conditions to keep the gravel moving at peak output. Perhaps you can get some valuable ideas on how to get the most out of your machines from this experience of the Elmhurst Chicago Stone Co., Elmhurst, Illinois, and M. M. Erb, Naperville.

Tournapulls described here are the old 16-yard Model "C's". The new Fullpak C Tournapulls have capacity of 18 cu. yds. heaped, and average more pay yards per load.

"C's" wade through mud

The Elmhurst Chicago Stone Company contracted with Marshall M. Erb for stripping 250,000 yards of overburden from their gravel pit near Winfield, Ill. Although no completion date was specified, Elmhurst Chicago officials told Erb they "wanted stripping done as quickly as possible so their plant could run full capacity through the next year".

That request meant moving dirt in late fall and straight through the Illinois winter. Rain, snow, and muddy ground would have to be overcome. The main problem for Contractor Erb was to select the machines which could work most efficiently. His choice was 2 electric-control 16-yard C Tournapulls. "I picked these machines," says Erb, "because of their well-known ability to work during rough going!"

Finishes "on time"

What happened after they started the job shows how good a choice he made. The 2 C Tournapulls combined to move 2,500 bank yards of clay and loamy topsoil per 9-hour shift, day in and day out, through the winter. They averaged 1,800-ft. cycles every 4 minutes . . . at times, completed cycles as long as 2,000 ft. in 3½ minutes. Said Mr. Erb, "They went through mud better than anything else did." And they finished their 15-acre stripping assignment long before quarry operations had to be moved in from worked-out sections of the pit.

If you, too, plan a year-around work schedule, or feel you might encounter muddy conditions any time on your job, it will pay you to check up on Tournapulls. Your LeTourneau-Westinghouse Distributor has a number of owner-verified reports like this which you can study to get some idea of costs and output. See him for size Tournapull to fit your needs.

Loads with 225 hp pusher average 11 bank yds. of clay and topsoil. Says 'Pull operator J. W. Fessler, "This rig is simple and easy to operate. Vision is good."

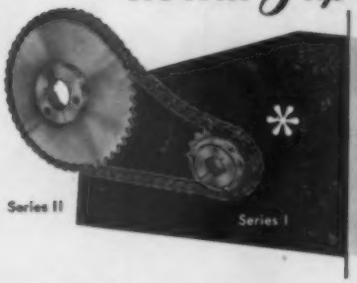
Fullpak—Trademark, Tournapull—Trademark Reg. U.S. Pat. Off. P-713-S-bw

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

NOW... *Grip-Master*® SPROCKETS have



HARDENED TEETH*
up to 7" in diameter
at no extra cost

- More resistance to shock loads and abrasion
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- This means: *longer chain drive life "on-the-shaft!"*

Grip-Master Sprockets are stocked in consecutive tooth sizes. Bores in 1-16" increments. Standard keyways and set screws are included. This means that exact speed ratios and bore sizes are available "off the shelf." No remachining needed. No lost time.

What's more, re-usable hubs and bushings keep your replacement costs way down. For better, lower-cost chain drive operation on your equipment, take advantage of these features now.

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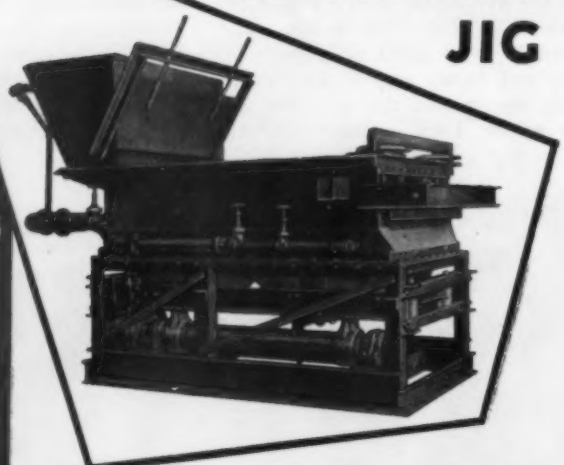
Write today for the first really engineered approach to the problem of supplying custom sprockets "off the shelf." Your Cullman Grip-Master catalog is complete with sizes, illustrations and price lists. Ask for Bulletin No. 200.

THE MECKUM SAND AND GRAVEL JIG



REMOVES
WOOD
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Improve your sand or gravel specifications at a low cost per ton. Of compact design, the Meckum Jig separates low from high specific gravity materials with a positive water and mechanical action.

Write us for details or nearest installation.

MECKUM ENGINEERING, INC.
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less the testimony shows that the injury or death resulted from negligence of the company's employees or officials.

For illustration, in *Glide v. Arkhola Sand & Gravel Company,* 208 S. W. (2d) 4, it was shown that a father sued the Arkhola Sand and Gravel Company to recover damages for the death of his son, named Glide, who was a truck driver. Glide had been found dead on the company's premises. The testimony showed that the company operated a sand and gravel plant on the banks of a river, from which it recovered sand and sold it by the truckload to truckers, who called for it. The sand was called for and sold both day and night, and drivers frequently loaded their own trucks without assistance.

The testimony showed that Glide had been in the trucking business for about eight years. One night the night watchman discovered Glide's body buried in the sand, with his feet in the chute. He was in a crouched position. The father contended that the company was liable in damages in failing to maintain sufficient help to load the sand.

The higher court refused to hold the company liable, saying:

"There were no eye witnesses to the accident. Conjecture and speculation, however plausible, cannot be permitted to supply the place of proof."

What is Mineral?

Here is another interesting question: "Is rock a mineral? Sometime ago I made a contract with a land owner which gives me the sole right to all 'minerals' in and on the land. We intended to have the sole right to quarry rock. Soon afterward I paid the farm owner money and started installing machinery, etc., on the land to quarry rock. Last week the land owner filed a suit to prevent me from taking any stone or rock from the land claiming that "minerals" in the contract does not include stone and rock. What is your opinion in this matter?"

The original intentions of contracting parties may decide the outcome of this controversy. In other words, the land owner is bound to permit the quarry owner to mine and take rock from the land if testimony can be introduced which will convince a jury that these were the intentions of the parties when the contract was signed.

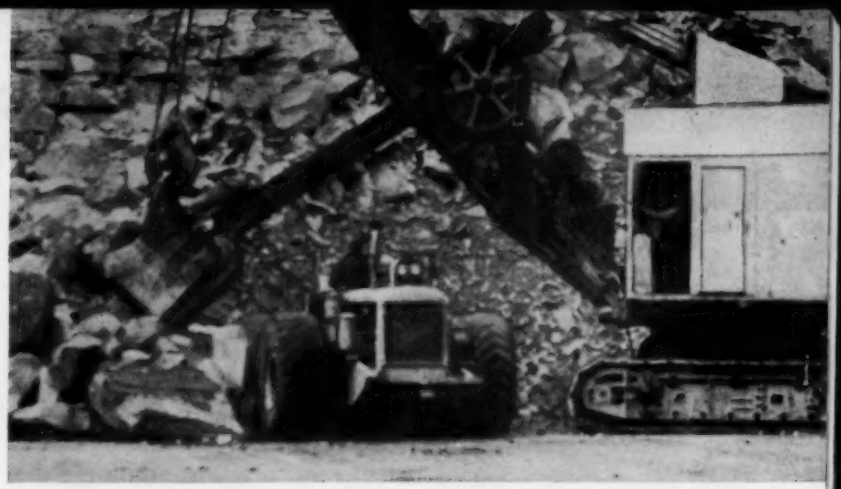
Otherwise, of course, modern higher courts hold that the scientific or technical definition of "minerals" is so broad as to embrace not only metallic minerals, oil, gas, stone,

3 shovels,

10 trucks,

23 stone stockpiles,

2 waste dumps...



1 tractor handles all cleanup

Too big for shovel to handle, these limestone chunks are dozed into worked-out sections of the pit. Four-wheel drive, 208 hp give tractor plenty of power to push up to 2½ cubic yards (5½ tons) per pass.

Tournatractor can switch up to 10 rail cars at once. Low-pressure tires do no damage to rails, ties, or paved surfaces. Supt. J. M. Christopher reports this unit requires "much less lubrication and considerably less maintenance than crawler-tractors formerly used."

For 100 years, the East St. Louis Stone Company and its predecessors have been quarrying limestone from a pit near Belleville, Illinois. For 100 years, they have dug in different directions, until, today, load areas are far apart and on levels varying from near-surface to over 225 ft. below surface. Three shovels and ten 11-ton trucks are now used to remove about 750,000 tons of stone yearly.

Suppose you were running this big job. Suppose you had to contend with its widely-scattered loading sites, its network of haul roads, and its steep grades. How many tractors would you ask for to do the "housekeeping" chores? How many to handle shovel cleanup? How many for haul road maintenance? Dump cleanup? Stockpiling? Emergency work?

East St. Louis Stone Company's Superintendent, J. M. Christopher, has what you'll probably agree is the most efficient answer possible. He is using *one tractor to do it all!* His choice is a high-speed rubber-tired Tournatractor.

Travels 1670 feet in 1 minute

This mobile unit "runs" from job to job at speeds to 19 mph. It dozes at speeds up to 8 mph. "We sure like its ability to go fast from one place to another," says Mr. Christopher. Its regular assignments, scattered 0.1 to 1.5 miles apart, include:

1. Cleans pit floor around all 3 shovels (1½, 2 and 2½ yds. in size). Works at each shovel two or three times per 8-hour shift. Besides ordinary cleanup, dozes over bank any rock chunks too big for shovel to handle. Typical 150 ft. to 200 ft. one-way push takes one minute . . . backup same distance takes half a minute.
2. Cleans shot stone after blasting at each of the 3 locations.
3. Moves large Joy drill around pit.
4. Levels and cleans around crushed stone stockpiles once or twice a day.
5. Levels waste dump once a day. Material mostly clay mixed with limestone. Tournatractor dozes up to 2½ cubic yards per pass.
6. Blades haul roads for the 10 trucks about once a day.
7. In emergencies, switches railroad cars. Can push 3 full cars (total weight, approximately 240 tons) or 10 empties.

Tournatractor can offer you the same high-speed, low-cost production for your projects, too. Your LeTourneau-Westinghouse Distributor will be glad to help you estimate production and costs. Machines can be purchased for pounds sterling or U.S. dollars.

Tournatractor—Trademark Reg. U. S. Pat. Off. T-787-Q-5

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Photo courtesy of
Harnischfeger Corp.
from
SANDPILES
to
SUPERHIGHWAYS
with
OWEN BUCKETS
"ON
THE JOB"
It will take a "heap" of sand and gravel to make the concrete necessary for the tremendous road building programs forthcoming and presently under way.
From past experience, batch plants and construction jobs everywhere know they can rely on their OWEN BUCKETS to handle the loads from cars to pile and from piles to hoppers.
Owen material handling buckets are available in a wide range of types and sizes to best suit your particular needs.
Write for the general purpose and material handling OWEN BUCKET Catalog and get all the enlightening facts.
Manufacturers of the independent line action grapples for handling rock, scrap and pulpwood.
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sand, gravel, and many other substances, but even the soil itself. See *Beary v. Shelton,* 151 Va. 28; *Northern Pacific v. Soderberg,* 188 U. S. 526; *Kinder v. LaSalle,* 310 Ill. 126; and *Rudd v. Hayden,* 265 Ky. 495. While the technical definition of "minerals" may include sand, gravel, stone, and rock, unless the contract, deed, or will contains a clause clearly stating that the word "minerals" shall be construed and interpreted *to include, sand gravel and stone,* the lattter are not minerals.

See *Travers v. Reinhardt,* 205 U.S. 423; *Northern Trust Company v. Wheeler,* 345 Ill. 182; and *West v. Glisson,* Tex. Civ. App., 184 S. W. 1042.

And again see *Heinatz v. Allen,* 217 S. W. (2d) 994, in which the court said:

"In our opinion substances such as sand, gravel and limestone are not minerals within the ordinary and natural meaning of the work unless they are rare and exceptional in character or possess a peculiar property giving them special value."

Innocent Buyer Must Suffer

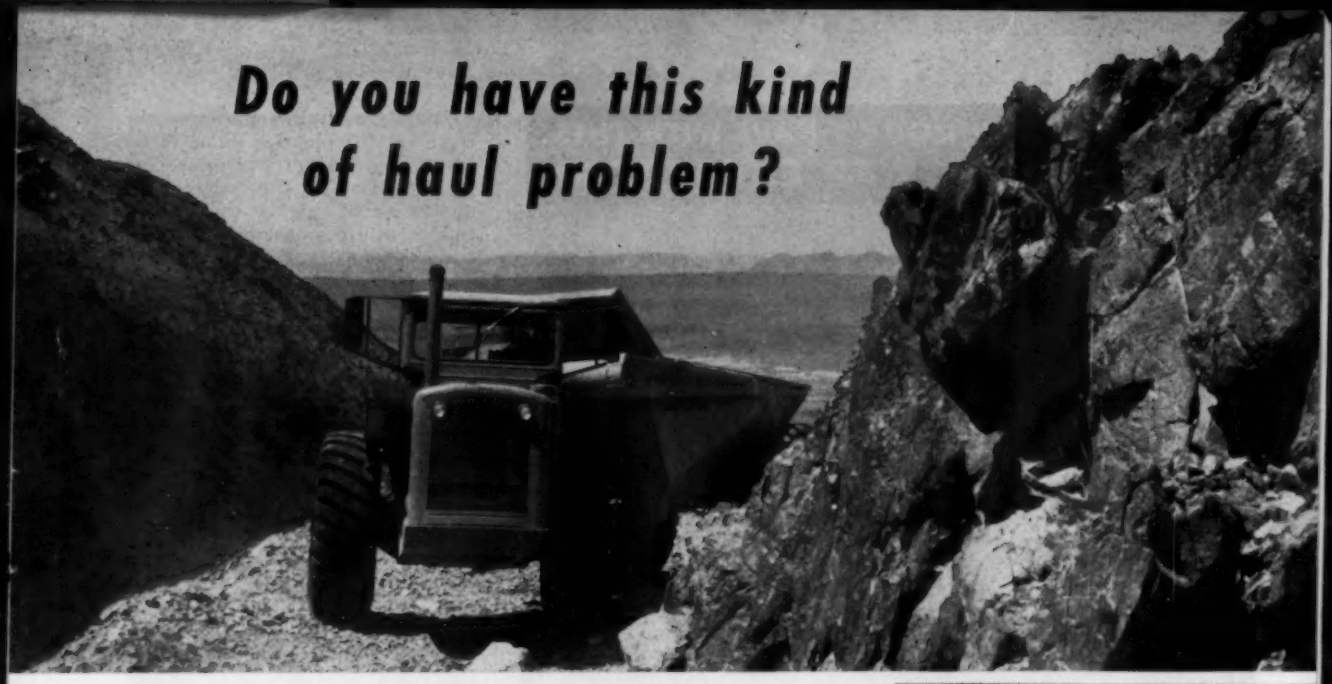
A cement contractor wishes information on the following question: "If mortgaged equipment is sold in a county other than the one where the mortgage is recorded, is the purchaser, who does not know the equipment was mortgaged, protected?"

The answer is no. A purchaser of equipment sold under either a chattel mortgage or conditional contract of sale takes a chance.

For example, in *Guerin V. Kirst,* 188 Pac. (2d) 509, a contractor engaged in a general grading business sold a man named Grove a used tractor. Grove made a small down payment, and the sale was evidenced by a conditional sales contract, which was recorded. The contractor allowed Grove to take possession of and use the tractor in his business. Without permission or knowledge of the contractor, Grove sold the tractor to a contractor named Kirst, who failed to examine records in the county where the contract was recorded. When the first conrtactor learned of this sale, he sued Kirst to get possession of the machine.

Kirst contended that he should be allowed to keep the tractor because he was an innocent buyer, and did not know that Grove owed the first contractor money on the tractor. The higher court refused to agree with this argument and ordered Kirst to give up possession of the tractor to the first contractor, saying:

Do you have this kind of haul problem?



180° switch-backs...narrow, steep, one-way haul roads...tight quarters

The Standard Slag Co., of Youngstown, Ohio are tackling some tough hauling problems at their magnesite ore mine, at Gabbs, Nevada. One mile, one-way haul road is narrow and steep, with sharp 180° switch-backs...loading is on narrow benches, dumping areas have restricted access. Compact, highly maneuverable machines were needed to handle the job ...Standard picked 2 D Tournapull Rear-Dumps for the assignment.

Turns within 12'4" radius

Teamed with a ¾-yard Northwest shovel, the rubber-tired "D's" were opening up a bench for loading when photos were taken. Carrying 11 tons of waste rock, the Rear-Dumps hauled to a narrow 15-ft. wide area where material was dumped over a 100-ft. bank. When full scale mining operations begin, company officials report that the "D's" will haul 500 tons of ore daily to the crushing plant over the winding mile-long road notched into the mountain side.

The two Model D Rear-Dumps have replaced three 8-cu. yd. trucks and are operating at lower hourly cost than the trucks. Records show that, excluding cable, repair parts cost only $257 during 13 machine months use.

Easy to control

"D's" on this job reduce the "hard-work" element by simple fingertip electric controls. Operators have no big steering wheels or manually operated shifts and levers to fight... fatigue is greatly reduced. Operator O. E. Metcalf reports, "These 'D's' are very easy to control. In fact they are easier to operate than trucks." The Superintendent on the job said, "The D Tournapull Rear-Dumps can't be beat on our narrow bench job."

Safer than trucks

You'll find as did the Standard Slag Co., that D Rear-Dumps are safer than any trucks where loading, hauling and dumping areas are limited. Three important reasons why "D's" offer greater safety are:

1. multi-disc air brakes with 2,822 sq. in. of braking surface...more braking surface on a single wheel than most haulers have on all four;

2. positive power steer through geared king-pin which gives 90° turning, and sure safe control at all times;

3. front-wheel drive which keeps power and traction on solid footing well ahead of rear wheels during dumping. These safety features give operators more confidence on steep grades and narrow roads, as well as when dumping loads over high banks.

¾-yard shovel loads "D" with 11 tons of waste rock. 90° turning ability of unit allows quick spotting on narrow shelf...wide target permits faster loading.

With front-wheel drive and powerful 4-wheel brakes, unit backs safely to edge of 100-ft. bank... dumps load clean at touch of switch.

Check the advantages of D Rear-Dumps for yourself. See how their maneuverability can speed cycles, cut costs, and increase your profits. Write or call for a demonstration today!

Tournapull—Trademark Reg. U.S. Pat. Off. DR-915-M-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

720 TONS . . . AN HOUR'S HAUL WITH THIS

SAUERMAN TOWER EXCAVATOR

Pioneer's giant excavator is the largest power scraper installation in the sand and gravel industry.

Pioneer Sand and Gravel Co., Seattle, Wash., needs a huge flow of material to supply its ready-mix plants and barges. They're getting it with a 12-cu. yd. Crescent Scraper.

The Crescent handles 480 yds. or 720 tons per hr. over an average haul from 300 to 350 ft. It operates along a 675-ft. span between movable head and tail towers located at the base and top of the 240-ft. high bank.

In addition to high rate of delivery, adoption of the Sauerman Method provides two other advantages over the 5-cu. yd. power shovel that formerly operated off the "toe" of the bank. These are: (1) material can now be taken from anywhere on the bank for blending and selection of gravel, and (2) material can be moved down the slope with no danger of cave-ins.

The tower excavator at Pioneer is mounted on portable towers and engineered by Sauerman for economical excavation in this type of deposit. This same digging tool . . . the Crescent scraper . . . can be engineered to your operation to give you equivalent high production at low cost.

Sauerman Scrapers range from ⅛ cu. yds. up to 18 cu. yds.

Because in most cases it is cheaper to drag material than it is to lift and transport it, *they give you the lowest cost per cu. yd. handled.*

Contact us for information and specific recommendations. Ask for field reports and Catalog A.

This view gives some conception of the height and steepness of the bank on which the Crescent works.

The Crescent delivers to a portable field hopper from which belt conveyors transport the material to the plant.

SAUERMAN BROS. INC.

634 S. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

"Under such circumstances the conditional vendor is entitled to recover even though the subsequent purchaser had no knowledge of the reservation of title by the original vendor until payment in full."

Not Manufacturing

A certain operation reports this problem: "The local city is trying to collect taxes from me for being in the manufacturing business. I operate and own a quarry. Am I subject to being taxed as a manufacturer?"

According to a late higher court decision, the answer is no.

For illustration, in *Dyer Quarry,* 250 Pa. 589, the higher court refused to hold that a company engaged in operating a quarry and a stone crusher is in the "manufacturing" business. Therefore, a quarry is not controlled by laws which regulate manufacturing businesses. This court said:

"Quarrying is not manufacturing; neither is crushing in and of itself a manufacturing process, unless it results in the production of a new and different article. Marketing stone is certainly not manufacturing. . . While it has extensive machinery, it is used only for the breaking of the stone or rock into the sizes required for the different purposes for which the stone is afterwards used. If the breaking of the stone into these sizes was performed, as it could be, by the manual labor of men wielding hammers and breaking the stone into the required sizes, it could scarcely be pretended that this is manufacturing. . . The employment of the process and the use of the machinery is solely for the purpose of breaking the stone into pieces of various sizes. . ."

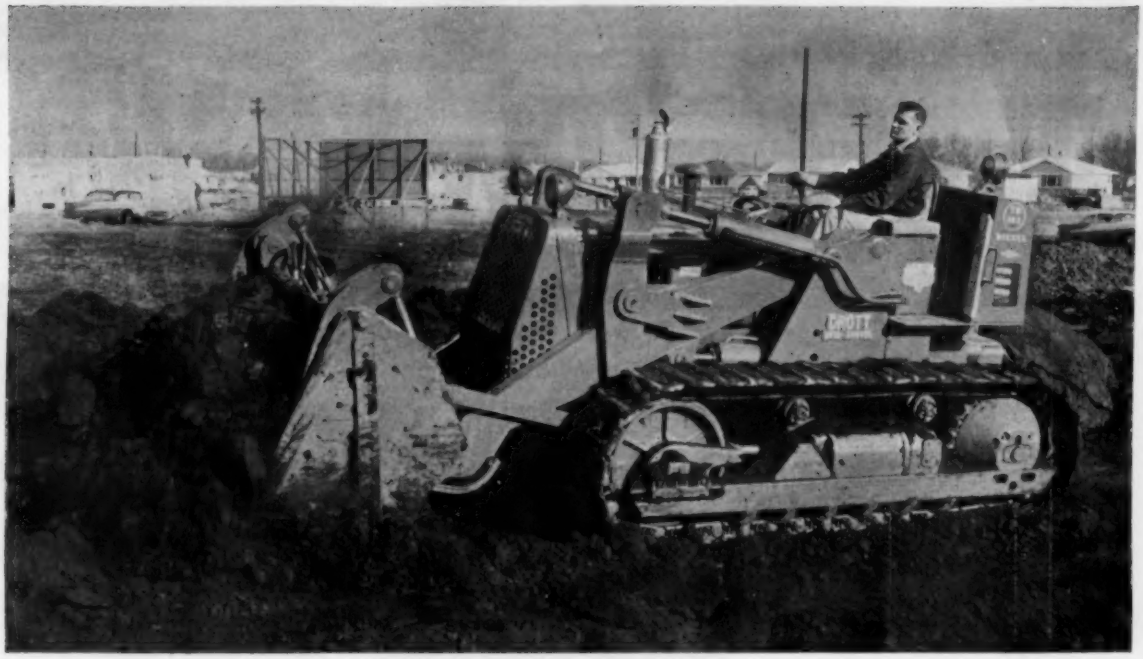
Not Doing Business

The owner of a sand and gravel plant asked: "Can a city or county tax a business corporation because it has a secondary office in this city?"

It is well settled that a corporation must pay taxes in the county in which its principal business is located. However, frequently it is difficult for taxing authorities to determine where such taxes actually are payable. The fact that a corporation maintains a set of books and an office in a city or county is not conclusive that this is the "location" of its principal place of business. So held the higher court in the case of *Iowa Limestone Company v. Cook,* 233 N. W. 682.

The facts of this case are that the *Iowa Limestone Company* was organized as a corporation under the

(*Continued on page* 170)



It's Skid-Shovel, dozer, clamshell and "carry-type scraper," all in one

...It's the International® Drott 4-In-1!

Skid-Shovel position gives you a speedy, straight-forward, depth-controlled bucket-fill. And to get "concrete-smashing" excavating force, just apply exclusive Drott *triple-power, pry-action breakout!* . . . Give the "machine selector" lever a finger-tip flick, for big-capacity dozing under hydraulic control . . . Another flick gives you a gravel-gulping clamshell, with a 30-inch dumping height advantage over ordinary "roll-forward" buckets! . . . Another lever-flick, and Bull-clam action is at your service—to heap-load the bucket like a carry-type scraper; to strip, grade, or spread with amazing accuracy, using clam lip control! And you *select* any Four-In-One machine action *on the go!*

It's the exclusive International Drott Four-In-One that arms you to beat a fleet of limited-duty rigs. Now available in 3 sizes, 1-yard to 2¼-yard capacity—all with the built-in protection of exclusive, shock-swallowing Hydro-Spring! Ask your International Drott Distributor for a Four-In-One *versatility unlimited* demonstration!

Ditch, grade, "dress shoulders" with Bullangledozer Attachment!

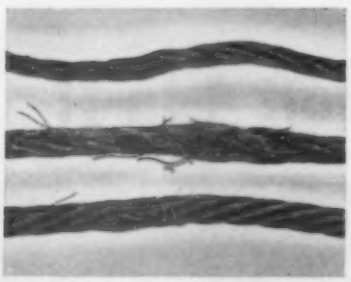
Remove bucket and attach this low-priced Bullangledozer—angle the blade to either side—then tilt the blade from the seat as desired with Drott's exclusive, roll-back action—and you've got a real ditching, sloping, or shoulder-dressing outfit. Or used as a straight dozer, this blade does heavy digging or fine grading under hydraulic "radius control." *Give it a try-out!*

International Harvester Company, Chicago 1, Illinois

INTERNATIONAL® DROTT

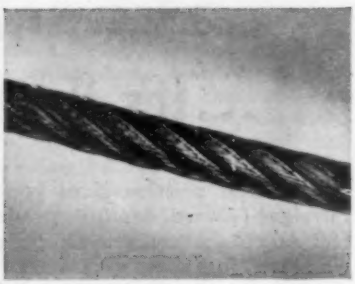
Tuffy® Tips

This Is Often Where The Trouble Starts...

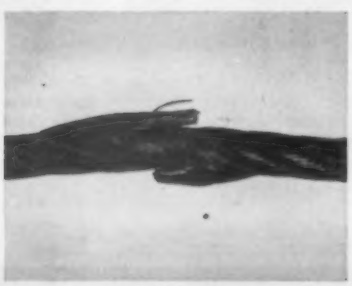


Here are three types of open kinks, all resulting from mishandling of wire rope. Guard against kinks by winding rope properly on the drum, and *never* pull a loop smaller, always enlarge it then straighten out the rope.

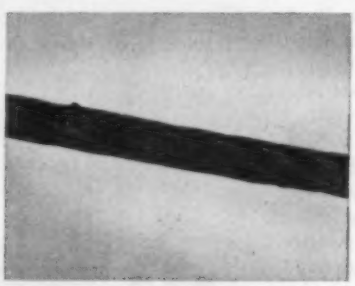
The start and finish of doglegs; the end being the point when all the wires on one side of the rope were worn through. Anything, such as a pulled loop, that causes a permanent bend or "set" will result in a dogleg.



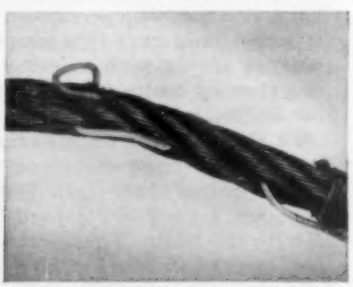
While different wire rope is constructed to resist abrasion to different degrees, improper use leads to injury. Watch for abrasion and when it begins to show locate the point where it is occurring and correct the cause.



Severe corrosive water conditions caused rust and corrosion to produce a one-strand break in this rope. Lubrication during the time the rope was in service would have retarded the damage . . . added greatly to the rope's life.

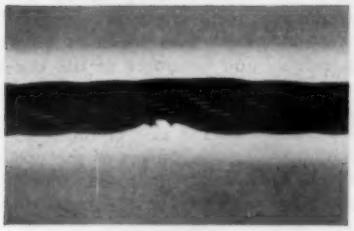


If broken in improperly, high strands like these may result. When installing, make sure that the fabricated relation between *strand with strand* and *strands with core* are not changed.



Nailing a wire rope through the core often causes many undesirable results. The wires and the core are badly damaged. A high strand may develop near the end or many feet away.

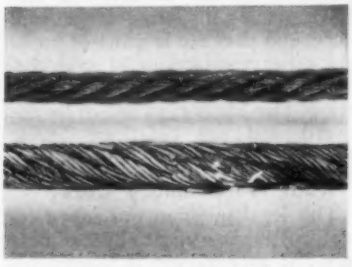
Broken Rules Break More WIRE ROPE Than Capacity Loads



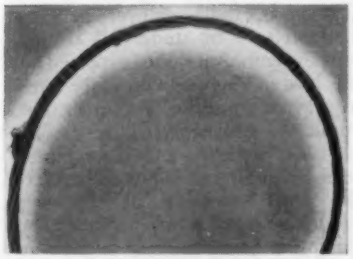
The photo at the left shows what happens when rope is run over or struck by a hard object and crushed. The damage to the strands greatly reduces the service life so carefully built into the rope.

Photo at the right shows how sudden release and rebound from an over-stressed condition may often cause birdcaging. Throwing a loop into the rope is also a major cause of birdcaging. Lang Lay ropes in particular are vulnerable to this abuse.

Here is an example of excessive pinching in the sheave grooves. This rope lasted through only 1-½ hours of service. To prevent pinching, make sure grooves are not worn deep and that the bearing surface is sufficiently large.



Excessive drum crushing like this occurs at points of cross-over or when rope is wound unevenly. Check for even winding of each layer on the drum to prevent crushing of this type.

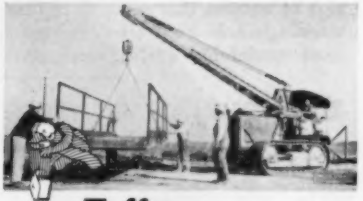


When a popped core occurs, continued use causes the rope lay to lengthen out considerably. This displacement of the core is usually caused by load tension being suddenly removed from the rope.

Forget Complicated Specifications— Just say Tuffy.!

Tuffy Scraper Rope

Mount a reel on your scraper and get full service out of every foot. Specially constructed for scraper service where complex destructive forces overwhelm ordinary rope.

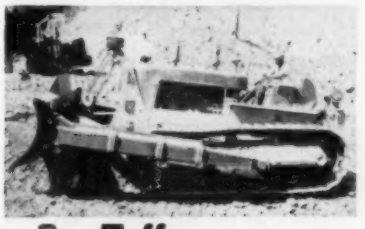


Tuffy Slings & Hoist Line

Slings of the famous Tuffy machine braided, kink-resisting, 9-part construction, cut replacement costs. For balanced performance, team them up with Tuffy Hoist Line.

Tuffy Dragline

Flexible enough for easy casting, tough enough to give you maximum abrasive resistance and service life in handling wet or dry, hard or soft materials.



Tuffy Dozer Rope

Has the stamina needed to stay on the job after ordinary ropes are thrown away. In 1/2" or 9/16" size on 150" reels for easy mounting to facilitate cut-off without waste.

Your Tuffy Distributor: Dependable Source of Information.

His job is more than just supplying the wire rope you want—when you want it. Your Tuffy distributor is always on the alert to help make your equipment do the best possible job, at the lowest possible cost. When you have a problem that calls for special knowledge concerning your equipment that uses wire rope, give your Tuffy distributor a call. He'll be glad to furnish the help you need including factory engineers.

union Wire Rope corp.

2132 Manchester Avenue Kansas City, 26, Missouri

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand

2

SAFETY HANGS BY A HOOK

It's small and relatively inexpensive, but a hoist hook carries the full load —as much as a crane is designed to handle! All hooks may look similar, but Laughlin hooks offer a combination of features that make them outstandingly safe. First, they are forged from special bar quality steel, then accurately heat treated; finally, Laughlin's precision die design controls the metal's grain flow during forming to keep the elastic limits of the hooks at their proper ratings.

Next time you need hooks remember that *safety hangs by a hook*—and Laughlin hooks are the safest!

THE RIGHT COMBINATION

An exacting combination of design, steel and drop forging goes into Laughlin Shackles. A combination that results in maximum strength without brittleness that can result in fracture under shock load or in extreme cold. Pins used in Laughlin Shackles are forged from the same high quality steel —their extra hefty design makes them safer when shock loads accidently occur. When you see the famous Laughlin trade mark on shackles (and all other Laughlin fittings), you're seeing the mark of safety! Your nearby Laughlin Distributor has shackles in sizes from 3/16" to 3".

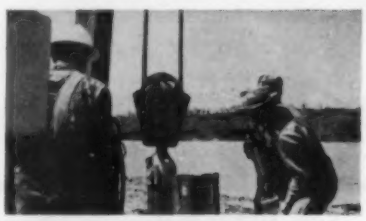
½" chain to rings, end and sling links, eye hooks, pad eyes, tractor eye bolts and other fittings.

The world's most complete line of fittings for chain and wire rope is described in the catalog available from your Laughlin Distributor, or Thomas Laughlin Division, American Hoist & Derrick Co., Portland, Maine.

LAUGHLIN LINKS INSTALLED QUICKLY

Lower downtime—fast changeover is reported by companies using super safe Laughlin Double Clevis Links to couple standard and alloy chains to fittings. Users everywhere have cut out expensive, time-consuming welding and blacksmithing in favor of simple installation. Laughlin's heat treated Double Clevis Link attaches ¼" to

SAFETY IN SIGHT



Ever worried about your crew forgetting the rated capacity of a block? You're free from worry and they're free from danger with Crosby "Load-Rated" Blocks because the load capacity is *embossed* in the side plates! A quick glance shows what the limits are —no chance to overload the block by mistake. Crews the world over are protected by Crosby "Load-Rated" Blocks —are yours? Crosby Products Division, American Hoist & Derrick Co., St. Paul 1, Minnesota.

Legal Decisions

(*From Page* 166)

laws of the state of Iowa. Its articles of incorporation recited that its principal place of business is at Alden, where it owns and operates a limestone quarry. However, an office is maintained in Des Moines, in a different county, where the principal set of books of the corporation is kept. The president, vice-president, and treasurer of the corporation live there. However, no sales are made in the office in Des Moines. When the sale of limestone is reported to the officers of the corporation in Des Moines, an order is sent to the superintendent at the quarry who fills it.

The county in which Des Moines is located made an assessment for taxes against the corporation on account of moneys and credits of $51,209.00, contending that these taxes are payable because the company maintains an office in Des Moines. However, the higher court held the corporation not required to pay its taxes in Des Moines, saying:

"It does not appear that the appellant (corporation) is doing business within the taxing district of the city of Des Moines. . . We conclude therefrom that the principal place of business of said corporation was at Alden, in Hardin County, and that it was 'doing its business' at said place, and that the keeping of books and other transactions of said corporation in the taxing district of the city of Des Moines, as shown by the record, did not constitute 'doing business' in said taxing district."

What is "Ordinary Care?"

This legal question was raised recently: "What is meant by 'ordinary care'? If an employee is injured because of his own carelessness, can he get damages from the employer?"

If it can be shown to the satisfaction of the court that an employee received an injury through his own negligence, the employer never is liable. However, under all circumstances employers are expected by the law to exercise "ordinary care" to prevent injury to employees. And employees are expected by the law to use "ordinary care" to protect themselves against injury. Therefore, the legal meaning of the term "ordinary care" is an important consideration in a majority of cases involving injuries to employees.

Broadly, the term "ordinary care" means that degree of care that would have been exercised by persons of average intelligence and prudence under the identical circumstances of

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He is at your service.

General Cable... *at your service!*

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the injury. Therefore, if an employer is sued for damages and the employee is successful in proving that he exercised "ordinary care" to prevent the injury, he materially improves his chances of obtaining a favorable decision against the employer.

On the other hand, the law seems to be well settled that when neither the employer nor the employee realized that a dangerous condition existed, and the condition was not generally recognized as being dangerous, the employer is not legally negligent and, therefore, he is not liable in damages for the resultant injury.

Must Report Cash

Consider this question: "If a seller makes a contract to sell a certain quality of merchandise at a specified price, is the seller compelled by law to report income tax on the deal every year, although the deal or contract is not completed for three years?"

According to a late higher court decision, the answer is yes.

For example, in *Batt v. United States*, 172 Fed. (2d) 1, one Batt was indicted for willfully attempting to evade income taxes. The district court found Batt guilty and imposed a sentence of a $10,000 fine, from which judgment he appealed.

These are facts: Batt was in the sand and gravel business under the name of Battle Creek Gravel Company. Its principal business was the producing and selling of processed, washed, and graded gravel. Batt made a contract with a contractor to sell him gravel. The contractor took out the gravel in his own trucks, and no record was kept by Batt of the amounts taken. No invoices were rendered by either Batt or the company, and the contractor made payments based on his own records. The contractor made payments in a single year totaling $15,704 for raw gravel. Batt did not report this income in his federal tax returns for this year. He testified that he did not report the income because he considered the deal with the contractor unfinished, and further, that his lawyer so advised him. However, the higher court approved the lower court's conviction, saying:

"It may be a little unfair, but a taxpayer is presumed to know the law, even though the tax attorneys may not know it, and he must be presumed to have known that he had to report all of the tax or all of the cash that he received."

NO CRUSH DAMAGE

to Hamilton's

REVELATION ...because it's CORD INSERTED

No wire is used in the carcass of Hamilton REVELATION Suction Hose. Specially-treated, hard-twisted cord and multi-ply heavy duck insure recovery to original shape and prevent failure due to crushing abuse.

REVELATION provides a smooth-bore suction hose for mining or construction work in six popular sizes from 1" to 3" I. D. Ask your jobber for details or . . .

RUN OVER OR CRUSHED

BACK TO SHAPE IN SECONDS

WRITE, WIRE, PHONE

If you would know more about Hamilton and our complete line of Industrial Rubber Products . . . Hose . . . Belts . . . Packings and Mats write, wire or 'phone today for our all new Catalog. A copy belongs in your reference library.

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Be sure... use Hamilton... Always dependable!

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Executive Office and Factories, 1097 Meade St., Trenton, N.J.

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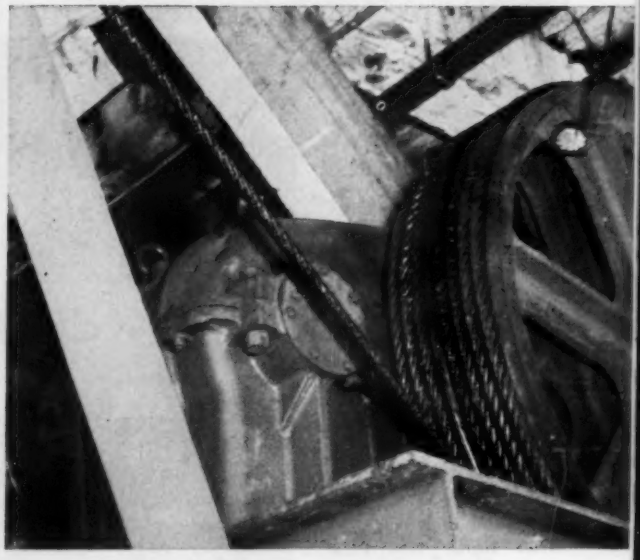
Kentucky, Tennessee Report Higher Mineral Output in '55

Kentucky's mineral production in 1955 increased 17 percent over 1954 to a total of $434,441,000, according to estimates made by the U. S. Bureau of Mines. It is emphasized that the figures for 1955 are *estimates* based on reports of producers and trends over preceding years, as represented by records of previous production.

Of the nonmetallic minerals (excluding fuels), cement led all others, but with little change from 1954. Stone, next in line, declined 8 percent in tonnage, dropping to 9,322,000 short tons, and 7 percent in value—to $12,515,000—below the all-time peak year 1954.

Sand and gravel, next in importance in total value, dropped 11 percent below the peak year 1954 in tonnage—to 4,210,000 short tons; but reports indicate total value ($4,775,000) exceeded that of 1954 by 8 percent, indicating a substantial increase in unit values.

Clay production, including ball, fire, miscellaneous and clay used in the manufacture of cement, indicated an increase of 10 percent in tonnage and value over 1954.



EXTRA FLEXIBILITY—Wire rope encounters fast sheave action, reverse bending, constant stop-and-start operation on many jobs. When this same rope must also lift or pull heavy loads, an unusually flexible, strong wire rope is needed.

Rope jobs like paver skip hoists, overhead cranes, large shovel and dragline hoists, and sawmill carriages demand these qualities. That's where the use of 6 x 37 Red-Strand wire rope saves time and money.

Where will 6x37 Red-Strand improve your wire rope service?

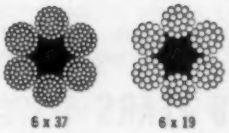
Look at a cross section of 6 x 37 wire rope. You see three rings of small, uniformly sized wires in each strand. This differs from a rope construction like 6 x 19, which contains fewer and larger wires.

The *smaller size* wires make 6 x 37 more *flexible*. The *larger number* of wires maintains rope *strength*.

Would this combination improve your wire rope service? Would it solve a problem for you?

Check with your Leschen man. He can help you.

Leschen's 64-page Wire Rope Handbook tells you all about 6 x 37 and other Red-Strand wire rope constructions. Ask or send for your free copy.



6 x 37 6 x 19

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

LESCHEN
HERCULES *Red-Strand*®
WIRE ROPE
HKP

AKINS...FIRST IN EXPERIENCE

used since 1908 for efficient, low-cost classification

TYPICAL CASE HISTORY

Pioneering in Phosphate

In cooperation with the phosphate mining companies, Colorado Iron Works engineers applied their specialized classification experience in helping to solve the problems associated with developing efficient treatment of phosphate ores. Akins dewatering, deoiling and desliming classifiers were among the first used in this field. Having proved their efficiency Akins Classifiers predominate the phosphate field.

1944

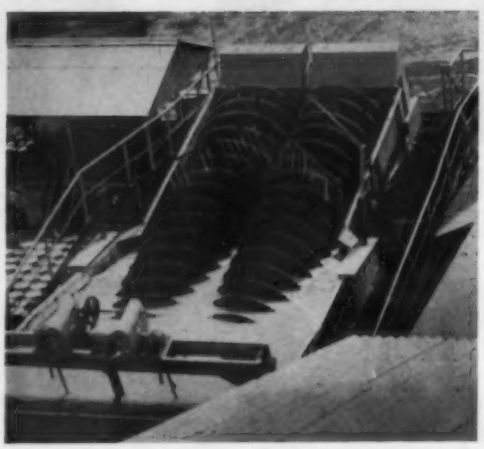
...2 Akins for Swift and Company's Watson Mine, one of first classifier installations on phosphate.

These 2—54" Akins Simplex Classifiers, installed in 1944, and 2 others purchased later, are dewatering and desliming +150, —35 mesh flotation feed.

1956

...8 Akins at Armour Fertilizer Works' New Plant, Bartow, Florida.

This recent installation includes 1—78" Duplex Akins, 1—66" Duplex Akins, 1—60" Duplex Akins, 1—66" Simplex Akins, and 4—60" Simplex Akins. They are being used for dewatering flotation feed, flotation concentrate, belt feed, belt concentrate, and for primary and secondary deoiling.



There are now 28 Akins operating successfully in 8 phosphate plants

AKINS... the Original Spiral Classifier*

*A Registered Trademark of C.I.W.

COLORADO IRON WORKS CO.

A SUBSIDIARY OF THE MINE AND SMELTER SUPPLY CO.

DENVER, COLORADO

SPECIALISTS IN CLASSIFICATION FOR 48 YEARS

Owing to the closing of some operations, fluorspar production in 1955 was only 55 percent of 1954 tonnage and value.

Reports or rock asphalt production indicated little change from 1954 in both tonnage and value.

Of the mineral fuels, bituminous coal again dominated the field, followed by petroleum, natural gas, and natural gas liquids, in that order. Coal production increased 11,800,000 short tons or 20 percent above 1954. Crude petroleum registered a 10 percent increase in volume and value.

Mineral production in Tennessee in 1955 was valued at $119,900,000, compared to $111,173,398 in 1954, according to estimates made by the U. S. Bureau of Mines. This represents an increase of 8 percent over 1954, the previous record year.

Cement output rose from 7,569,279 bbl. (376 lb.) in 1954 to 7,900,000 bbl. in 1955; and total value increased from $19,735,620 to $20,600,000.

Sand and gravel production increased slightly—from 5,155,185 short tons in 1954 to 5,400,000 last year—but value declined from $6,141,139 to $6,000,000. Stone production declined from 14,061,181 short tons in 1954 to 13,000,000 in 1955, and value dropped from $19,695,979 to $17,000,000.

Barite production remained at about the same level. Clay output increased about 80 percent, mainly because of an enlarged demand for clay products. Marketable production of phosphate rock increased about 4 percent—to 1,700,000, the highest for any year so far—and value rose accordingly, to $12,000,000.

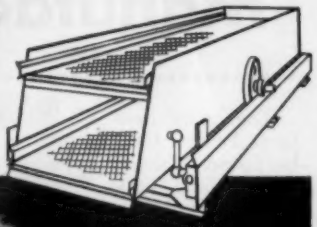
Coal production increased 9 percent. Natural gas production remained at about the same figure as that of 1954, but petroleum output declined 6 percent.

Gold, silver, and zinc production reversed the downward trend of the last few years, and each recorded increases over 1954. Gold production rose 1 percent, silver 4 percent, and zinc 33 percent. Copper recovery continued to increase, the total production by 8 percent and total value by 36 percent. Shipments of metallurgical grade manganese reached a total more than twice as high as that of 1954.

Calaveras Cement Company announced recently that a 4 percent increase in the price of its gray cements, effective April 1, advances the cost per barrel by 15 cents.

SECO SCREENS . . . ON-THE-JOB IN TOBACCOLAND

Huge Granite Quarry Chooses 6 Seco Screens



W. E. GRAHAM & SON PLANT GEARED FOR EFFICIENT PRODUCTION

It takes an aerial view like the one above to show you the scope of W. E. Graham and Sons highly successful quarrying operation at Winston-Salem, North Carolina.

Here in tobaccoland, buyers of crushed stone demand clean, accurately sized material . . . and that's why this progressive operator's business keeps growing and growing.

Read what Mr. Lewis S. Graham wrote about SECO screens' part in this success story.

"Our main crushing and screening plant here at Winston-Salem is equipped with six SECO screens, some of which have been in use for quite a number of years. We have always had what we consider real good service from these screens from a standpoint of minimum down time, excellent capacity and the ability to deliver to our bins and stockpiles the properly sized stone to meet any required specification."

SEND FOR NEW SECO CATALOG #204 TODAY

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

Whether You Need One Screen or Twenty

SECO welcomes the opportunity to help you do a better screening job. Make 1956 your "look ahead" year. Plan now for years of more profitable screening, whether it's fine ag-lime or coarse rip-rap.

SCREEN EQUIPMENT CO., INC.

Buffalo 25, New York

Manufacturers' News

The acquisition of Automotive Gear Works, Inc., Richmond, Ind., by Eaton Manufacturing Company of Cleveland, Ohio, through an exchange of stock has been announced. An agreement has been signed under which all of the stock of Automotive Gear will be acquired by Eaton. Automotive Gear Works will be operated as a subsidiary of Eaton.

The present management of the Richmond gear manufacturer will continue to operate the business with C. E. Hamilton as president and G. W. Frame as general manager.

Leslie B. Schramm, sales manager of Schramm, Inc., West Chester, Penn., announces the appointment of P. F. Smith, IV, as dealer sales manager. Joseph E. McGrogan continues as regional sales manager in charge of southern and central territories; Arno O. Witt continues as manager of Canadian and export business; John P. Powell becomes regional sales manager of eastern territories; and Donald M. Thomson continues as western sales manager with headquarters in San Francisco, Calif.

S K F Industries, Inc., Philadelphia, Penn., announces the appointment of the TEK Bearing Company, Inc., Bridgeport, Conn., as an authorized distributor of S K F ball and roller bearings.

TEK Bearing Company, which was established over 25 years ago, operates fourteen stock carrying sales offices located strategically throughout New England, eastern New York, and northern New Jersey, and provides complete technical services.

Richard S. Rhodes, assistant manager, production department of Koppers Company, Inc., Pittsburgh, Penn., since 1954, has been named assistant to the president. In the newly-created position he will assist the president in any activity as assigned, with special responsibility for developing policies and methods for handling and evaluating the company's capital program and capital appropriations. He also will serve as permanent secretary of the company's Appropriations Committee and as a voting member of that committee.

W. H. Emery, former St. Louis branch manager for Autocar, has joined the sales staff of Reo Motors Inc., at St. Louis, Mo. He is a 30-year man in the truck business in Illinois and Missouri, and formerly operated his own business at Wood River, Ill.

W. J. Ehrsam, Jr., president and general manager of the J. B. Ehrsam & Sons Manufacturing Company of Enterprise, Kansas, has announced the purchase of the foundry of Morse-Koob, Inc., in Wichita. Operations will be conducted under the name of Ehrsam Wichita Foundry, Inc.

Les Parrish, manager of Ehrsam's Foundry Division at Enterprise, will also manage the Wichita foundry. The new company is planning no changes in personnel.

The J. B. Ehrsam & Sons Manufacturing Company has been in the foundry business for 82 years, supplying customers throughout the world with quality gray iron castings.

W. J. Ehrsam, Jr.

Warren L. Howes

Warren L. Howes has been appointed manager of Western Knapp Engineering Company, division of Western Machinery Company, San Francisco, Calif. He has been with Western Machinery since 1948, pregressively serving as chief engineer, district manager, eastern division manager, including that of project executive on the White Pine Copper development in Michigan.

W.K.E. division of Western Machinery Company has been presented a safety award in recognition of 105,000 accident free hours reported by its Hibbing, Minnesota, district office. The bronze plaque was presented by the Accident Prevention Committee of the Associated General Contractors of Minnesota.

98 USERS IN 100 say GILSON IS FOR YOU!

The GILSON Screen

is designed for quick, accurate size-testing of crushed stone, gravel, slag, coal, ores, and similar materials. It handles up to one cubic foot of sample, makes seven separations simultaneously in five minutes or less.

A questionnaire to GILSON users, many of them owners of several screen units, showed that 97.5% not only approved GILSON, but recommended it to others. The remaining 2½% includes 1% who found GILSON performance satisfactory but reserved recommendation, and 1% with no comment.

GILSON users cut costs, increase profits by avoiding guesswork and error in meeting sizing specifications.

87.1% of GILSON owners reported maintenance "normal" or "light." Of these units in use at least 3 years and up to 14 years, 32.3% report no maintenance except lubrication!

Write for information and prices NOW!

A Sand Attachment for handling 8-inch sieves is optional equipment.

GILSON SCREEN CO.
MALINTA, OHIO

save on repairs with Allied BULLDOG

TUF-A-BRASE
STEEL PLATE
• ECONOMICAL IN EVERY WAY • TOUGH AND DURABLE • WELDING VERSATILITY • EXPERTLY TEMPERED • COUNTLESS APPLICATIONS: TRUCK AND TRAILER BEDS, CHUTES, BUCKETS, SCRAPERS, AND MANY OTHER USES.

Also . . . Grip-lug, Grader Blades, Special Cutting Edges, Pneumatic Tools, Traffic Signs and Sign Posts, Gutter Broom Wire and Fibre Brooms.

Territory open for agents and dealers.

ALLIED STEEL & TRACTOR PRODUCTS INC.
7835 Broadway • Cleveland 5, Ohio • U.S.A.

A FLOOD OF AGGREGATE

Need a lot of aggregate every day? A cement plant does, and has a sound source for it in this MARION 7400. Its 8-yard bucket keeps the hopper full. Its 200-foot boom holds equipment moves to a minimum. Its huge tub base and big walking shoes let it travel and walk anywhere.

MARION POWER SHOVEL COMPANY • MARION, OHIO

According to an announcement released by Ray F. Schneider, president of the Williams Patent Crusher & Pulverizer Company of St. Louis, Missouri, the process and feed hammer mill business of the old Dixie Machinery Manufacturing Company has been acquired by Williams.

It is the intention of the Williams Company to supply repairs and replacements for existing Dixie machines. The personnel of the old Dixie organization is being taken over by Williams, so it is expected that good service can be and will be rendered the owners of Dixie equipment.

L. B. McKnight, president of Chain-Belt Company, Milwaukee, Wis., has been elected a director of The Heil Co., also in Milwaukee. He has been a director of Chain-Belt Co. since 1948 and president since 1953. He was recently elected a trustee of Northwestern Mutual Life Insurance Company and also serves on the board of Safeway Steel Products, Inc.

KA-MO Trailer and Equipment Co., Inc., 545-49 South Fifth Street, Kansas City, Kansas, has been named as the Heil Body and Hoist distributor for western Missouri and eastern Kansas.

Harry R. LeSage has been appointed Chicago district manager by the W. W. Sly Manufacturing Co., Cleveland, Ohio. He succeeds Allen Jones, who has been named director of engineering for the company.

Prior to the new appointment, Mr. Jones was Chicago District manager.

Harry R. LeSage

Allen Jones

He was previously district manager for Peabody Engineering Corp., Chicago manufacturer of combustion equipment, and design engineer for Urdahl & Everetts, Consulting Engineers, Washington, D. C.

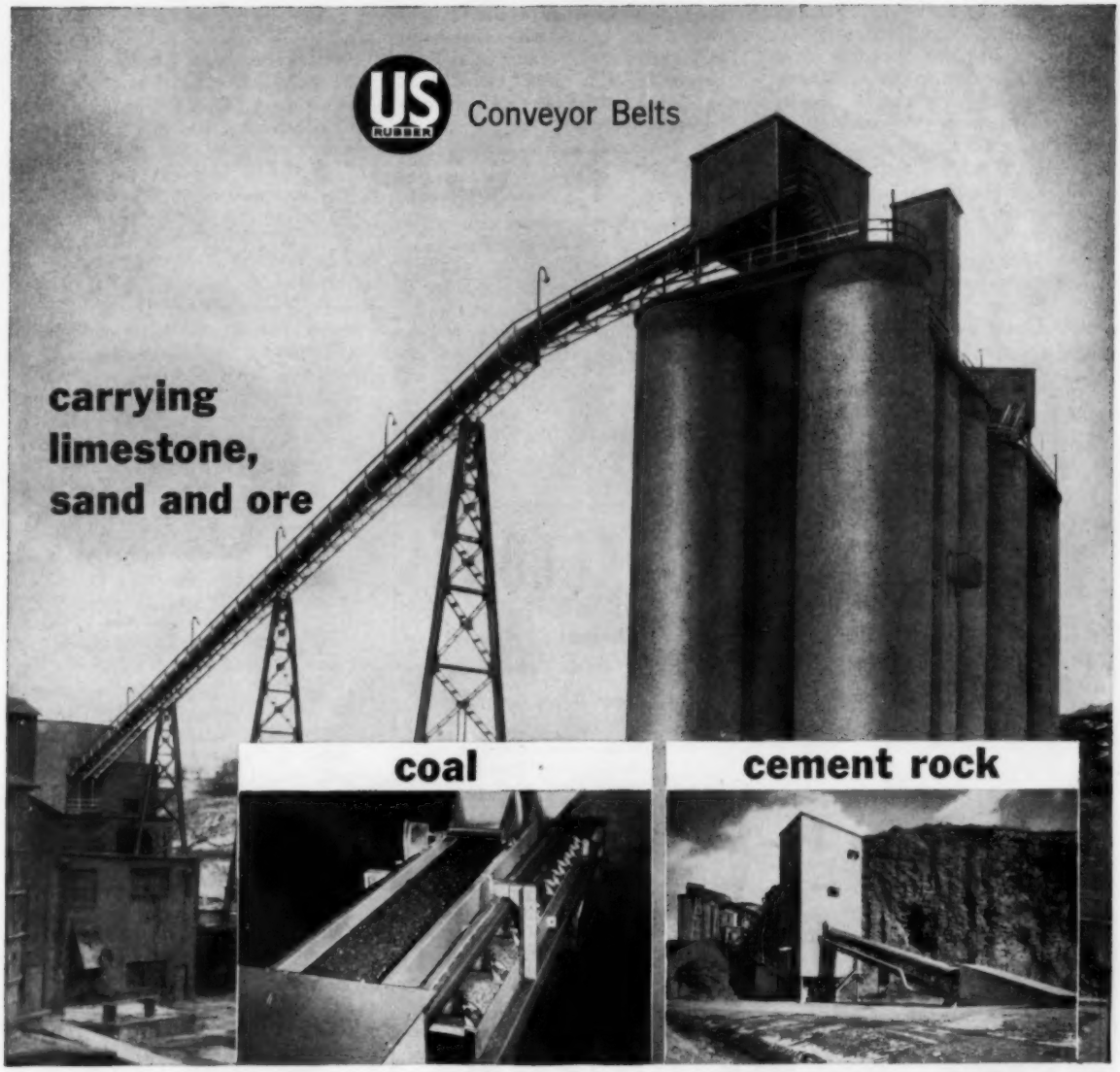
Three zone managers of Thor electric tool and Thor SpeedTool sales have been appointed by Thor Power Tool Company, Aurora, Ill. They will coordinate sales in cooperation with branch managers in eastern, western, and southeastern parts of the United States.

J. P. Stine, former electric tool service engineer in the New York and Newark branches, has been named east coast zone manager covering the Thor New York, Boston, Buffalo, and Newark branch territories, with headquarters in Newark, N. J.

C. B. Baron, former electric tool service engineer in the New York, Chicago, and Los Angeles branches, and a former electric tool division manager, is the new west coast zone manager for Thor's Los Angeles, San Francisco, and Seattle territories, with headquarters in Los Angeles, Calif.

R. J. Burch, former Birmingham electric tool service engineer, was appointed southeastern zone manager for Mississippi, Tennessee, Alabama, North Carolina, South Carolina, Georgia, Florida, and most of Louisiana. He will make his headquarters in Birmingham, Ala.

Roscoe B. Smith, Sr., 64, of 101 Blue Rock Road, Edgewood Hills, a veteran explosives man and a retired employe of Hercules Powder Company, Wilmington, Delaware, died at Camden, S. C., following an illness due to a heart condition.



it's 100% "U. S." Belting in this cement plant's new raw-materials handling system

When this Pennsylvania cement plant expanded its raw-materials handling system, it chose U. S. Conveyor Belts exclusively. Experience had proven that "U. S." belts would give the required service and economy.

A total of ten "U. S." cotton-nylon (styles EN and XN) conveyor belts carry the wide variety of materials used in the manufacture of the cement.

Each belt, of course, was designed for its particular job. The entire installation is a good example of Three-Way Engineering, a "U. S." technique which has always proven successful on thousands of materials handling jobs, big and small. In Three-Way Engineering, "U. S." engineers work hand in hand with the designers of the conveyor system and the engineers of the operator. This method makes sure of the right belt for the right job.

Any belting problems can be solved by factory-trained engineers of the 28 "U. S." District Sales Offices. Or write us at Rockefeller Center, New York 20, N. Y.

US RUBBER

Mechanical Goods Division

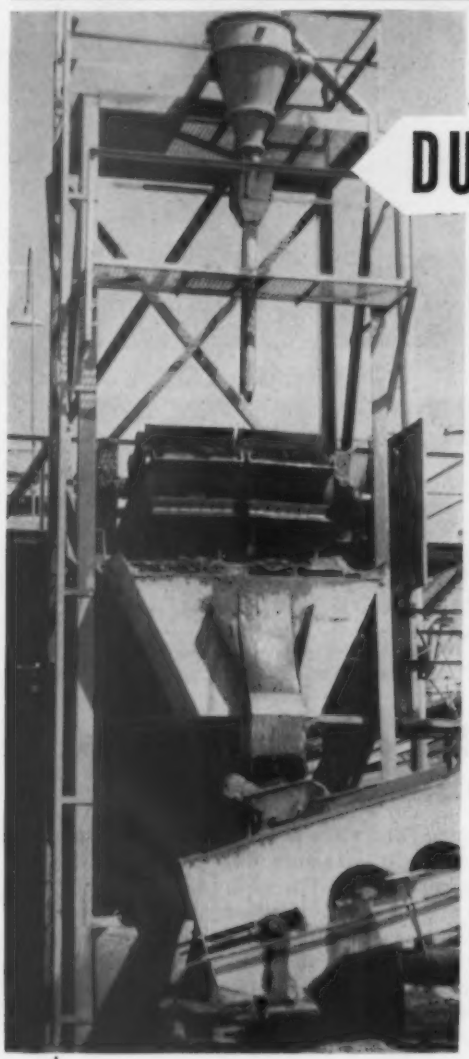
United States Rubber

The Okonite Company, Passaic, N. J., has announced purchase of the 160-acre Studebaker-Packard plant at New Brunswick in an expansion move. The property was purchased by Okonite from Volkswagen of America, Inc., a subsidiary of Volkswagenwerk GMBH, German automobile manufacturers, who bought the plant from Studebaker-Packard last November.

John D. Fess, formerly northwest manager with headquarters at Portland, Oregon, has been appointed district manager of the Pittsburgh office of Okonite.

James B. Caldwell, who had previously been assigned to the Okonite Los Angeles office, will assume the position of branch manager at Portland, while Edwin R. Conklin, of the Portland staff, will become branch manager at Seattle.

The Frank G. Hough Company of Libertyville, Ill., has announced the construction of an addition to its plant to meet the increased demands for "PAYLOADER" tractor-shovels. The new facilities will provide an area 32 times greater in size than the original property was when the company moved from Chicago sixteen years ago.



DURACLONE

Magically Extracts Clean, Fine Sand from Drag Overflow

● As its pit went deeper, Century Rock Products, El Monte, Calif., encountered lessened amounts of required fine sands. To correct the deficiency, the firm installed a 25-in. DURACLONE to extract the precious fines it had been losing in the waste overflow from a drag-type classifier.

● Using a 4-in. pump to force the pulp to the DURACLONE, mounted high above the discharge end of the drag (see picture), recovery averages about 5 t.p.hr.

● DURACLONES are completely rubber-lined for long life and are fitted with special spirals to gain velocity and speed the cyclonic separating action for maximum underflow recovery. Sold with an unqualified guarantee of performance when installed as directed. Available in sizes to handle up to 800 g.p.m. input.

Get the Facts Today!

H. B. LARGE ENGINEERING CO.

262 S. PARKWOOD AVENUE

PASADENA, CALIF.

Announcement of the formation of the Raymond Bag Corporation, Division of the Albemarle Paper Manufacturing Company, has been made by F. D. Gottwald, president of Albemarle, from the parent company's offices in Richmond, Virginia.

The new corporation combines the manufacturing facilities of the Raymond Bag Company of Middletown, Ohio, with those of the Multiwall Bag Division of Albemarle, located at Richmond, Va. Paper for both operations will be supplied by Albemarle's two Richmond paper mills and their Halifax Paper Division at Roanoke Rapids, North Carolina, making the new corporation a fully integrated operation with General Offices at Middletown, Ohio.

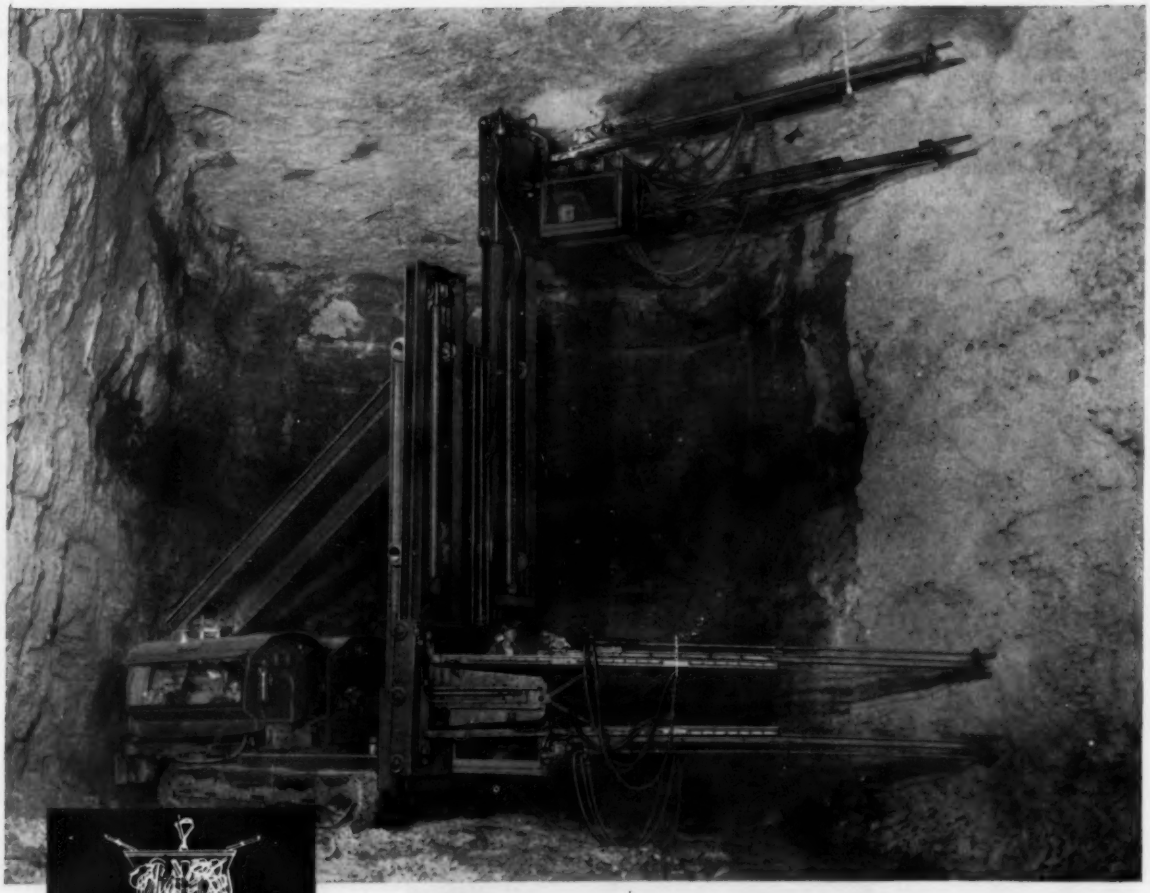
Officers of the Raymond Bag Corp. include F. D. Gottwald, chairman of the board; C. L. Mers, president; J. H. Lawrence, vice-president-manufacturing; J. R. Clements, vice-president-sales; W. G. Shaw, treasurer; and C. C. Mers, secretary.

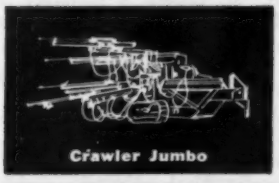
William B. Hicks has been appointed manager of sales development in the rock products industry by Hewitt-Robins, Inc., Stamford, Conn. He will assist the company's sales force in developing sales to sand and gravel, crushed stone, and cement companies. He will be located at the Hewitt-Robins executive offices in Stamford, Conn.

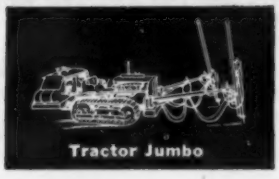
Mr. Hicks is the third member of a group organized to aid in the promotion of sales to specific industries. Other members of the group are Francis B. Speaker, who specializes in the non-ferrous metal mining industry, and Charles W. Haines, who specializes in the petroleum industry.

Myron W. Rhoten has been named managing director of Allis-Chalmers Great Britain Limited, the wholly-owned Allis-Chalmers subsidiary with headquarters in Essendine, England. He has been European territory sales manager for the Allis-Chalmers Manufacturing Company, Tractor Group, since February, 1953, headquartering at the home office in Milwaukee, Wis.

Mr. Rhoten joined Allis-Chalmers in 1938 at its Sioux City, Iowa, branch, following an association with an Allis-Chalmers dealer at Elk Point, S. D. Later he joined the Tractor Group's branch in Madison, Wis., and in 1941 came to the home office where he was made export service manager in 1943. He succeeds E. J. Mercer who returned in January to become general manager of the Tractor Group's Construction Machinery Division.







BIG JOBS OR SMALL ONES

I-R HYDRA-BOOM JUMBOS

mean faster, easier rock drilling

THE HUGE, self-powered and self-propelled Hydra-Boom drilling rig shown above was designed and built by Ingersoll-Rand for use in a large, underground limestone mine. With two extendable towers, each carrying two centrally-controlled Hydra-Booms, it gives complete coverage of a 40-foot high face.

Other typical Hydra-Boom drilling rigs are illustrated at the left, showing the *unlimited versatility* of these fast-acting, hydraulically operated boom mountings. Wherever you need effortless, fingertip control of drill spotting – wherever you want to convert setup time into drilling time – it will pay you to do the job with a Hydra-Boom rig. Let us help you engineer your unusual drilling problems. Write today, also ask for your free copy of Bulletin No. 4162.

Ingersoll-Rand 5-273

11 BROADWAY, NEW YORK 4, N. Y.

DRIFTERS • JACKHAMERS • DRILLMASTERS • QUARRYMASTERS • CARSET BITS • AIR TOOLS

Western Precipitation Corporation, Los Angeles, Calif., has announced the appointment of H. H. Haaland as chief of its Precipitator Engineering Division, succeeding D. H. Wheeler, resigned. In his new duties, Mr. Haalan will be in charge of design and engineering for the company's well-known Cottrell Electrical Precipitators.

To meet the steadily-growing demand for its dust and flyash recovery equipment in the industrial South, Western Precipitation also announces the addition of Gilbert G. Schneider to its staff operating out of the Atlanta district offices. In his new location, he will assist Kenneth C. Cree as sales manager in serving the states of North and South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, Louisiana, Arkansas, Oklahoma, and Texas.

Also announced is the promotion of H. B. Alford to chief field engineer, responsible for all services, construction, and inspection activities throughout the United States and Canada. He joined the company as a construction engineer, was subsequently transferred to service engineering work, and then was promoted to district engineer operating out of the New York offices. Subsequently he was named chief engineer for all districts, and in his new advancement, will also supervise all construction and inspection operations. Mr. Alford will make his headquarters in the Los Angeles offices of the company.

J. W. Bloomquist, domestic sales manager of Euclid Division, General Motors Corporation, Cleveland, Ohio, announced the following appointments of regional sales managers.

Eastern regional manager is John A. Polhemus with offices in New York City. His territory includes eastern Canada, Maine, Vermont. New Hampshire, New York, Massachusetts, Connecticut, Rhode Island, New Jersey, Maryland, Delaware, District of Columbia, and eastern Pennsylvania.

J. E. Ehlert, with headquarters in Cleveland, is now manager of the home office district which covers Ohio, Michigan, Indiana, and western Pennsylvania.

E. C. Dellen is central regional manager with offices in Kansas City, Missouri. This region includes North Dakota, Wyoming, Colorado, Arizona, New Mexico, Oklahoma, Kansas, Nebraska, Iowa, Missouri, Illinois, Wisconsin, and Manitoba in Canada.

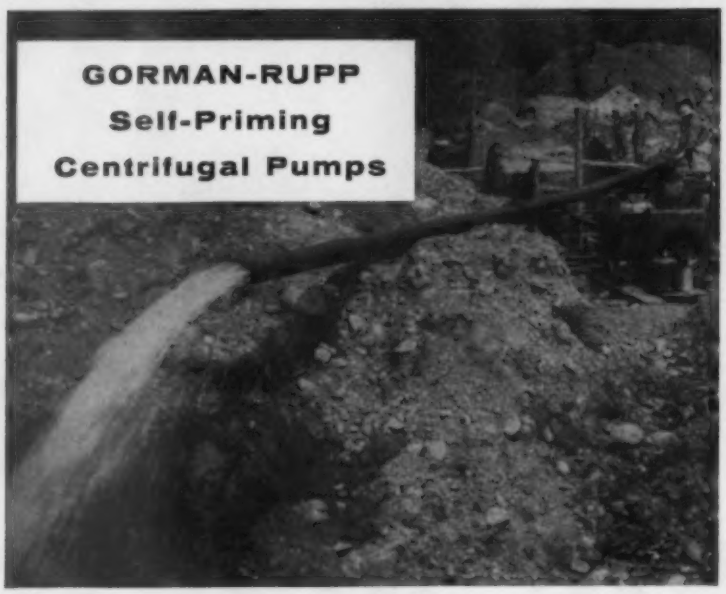
C. B. Pace, with offices in Atlanta, is manager of the southern region which includes Texas, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, North Carolina, South Carolina, Tennessee, Kentucky, West Virginia, and Virginia.

R. M. Brown is manager of the Hibbing, Minnesota, branch. He covers Minnesota and the western part of the Upper Penninsula of Michigan.

M. H. Johnson, with offices in Oakland, California, is western regional manager. The western region includes Utah, Nevada, California, Montana, Idaho, Oregon, Washington, Alaska, and western Canada.

J. L. Hollis has been named mill agent at the Bagpak plant of International Paper Company at Bastrop, Louisiana. This plant is one of three operated by the Bagpak Division of International Paper Company which makes and sells multiwall shipping sacks.

Mr. Hollis was born in 1919 in Marion, Louisiana. He joined the Bagpak Division in 1948 as an assistant timekeeper. Prior to his present appointment, he was first clerk for the plant.



PETER KIEWIT SONS' COMPANY rely on Gorman-Rupp Pumps to handle Charles River seepage on relief sewer project near Boston.

DEWATERING INSURANCE

Work must go on. It *does* with Gorman-Rupp Pumps on the job. They pump out water, dry out excavations fast. In fact, Gorman-Rupp guarantees its pumps to handle more dirty water more hours, using less gasoline and to prime quicker than any other self-priming pumps of similar size.

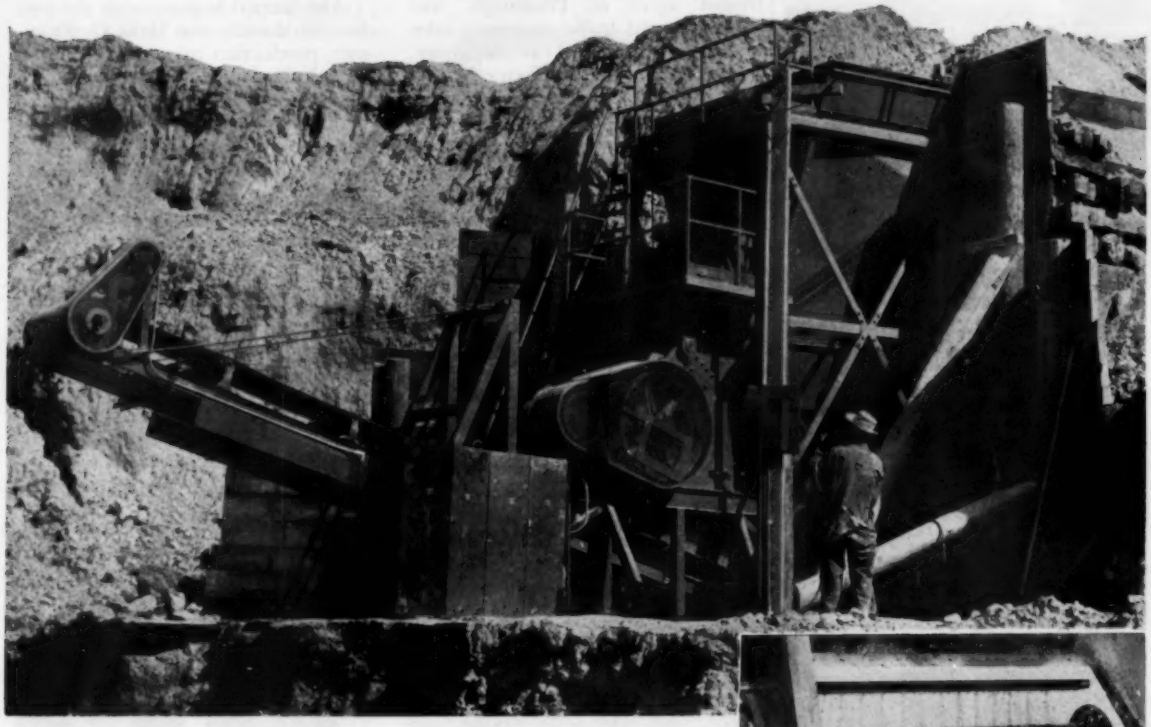
Engine- and motor-driven pumps available from 1½", 5850 G. P. H. to 10", 240,000 G. P. H. capacities. Ask for bulletin 8-CP-11.

Model 36A-JF, on above project, has an A. G. C. rating of 90,000 G. P. H. at 25' TDH.

Gorman-Rupp PUMPS

THE GORMAN-RUPP COMPANY
305 Bowman St., Mansfield, Ohio

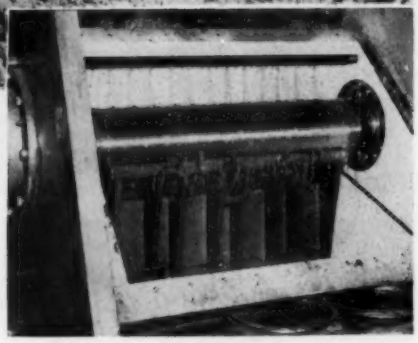
Kue-Ken Jaw Crusher in knock-down plant makes short runs more profitable



Minimum foundations required for Kue-Ken crusher makes it easy for this operator to assemble his knock-down plant quickly. The plant includes coarse grizzly, bypass grizzly, loading conveyor and 30″ x 15″ Kue-Ken jaw crusher that takes choke feed directly from the coarse grizzly. Crusher operates at 375 rpm to provide 25% to 50% more capacity and a more cubical product. When job is over the plant is quickly unbolted and moved to another location. Kue-Ken operates inexpensively. Jaw plates outlast those of other crushers 5 to 10 times, power consumption is far less, breakage from overload is eliminated by automatic flywheel release that is quickly reset.

WRITE FOR CATALOG

STRAUB MFG., CO., INC. • 8385 Baldwin St. • Oakland, Calif.



SELF-LUBRICATING!

Kue-Ken toggles do not wear out. They are machined, polished, flame hardened. They operate in a bath of filtered, dust-free oil that maintains their original micrometer tolerances for the life of the crusher. Photo shows Kue-Ken operating with cover removed to show filtered oil pouring over shaft, bearings and toggles.

KUE-KEN CRUSHERS

"LOWEST COST-PER-TON CRUSHING"

Jaw Crushers · Gyratory Crushers · Overhead Eccentric Crushers · Revolving Screens
Classifiers · Feeders · Rib Cone Ball Mills · Concentrating Tables · Vibrating Screens

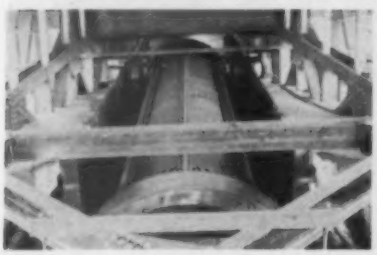
DEALERS:

SEATTLE, WASH. ..... Washington Machinery Co.
SALT LAKE CITY, UTAH ..... Lund Machinery Co.
SAN ANTONIO, TEX. ..... Closner Equipment Co.
PORTLAND, ORE. ..... Contractors Equipment Co.
LOS ANGELES, CALIF. ..... Garlinghouse, Fremon Co.
PHOENIX, ARIZ. ..... O. S. Stapley Co.
DENVER, COLO. ..... Union Supply Co.
CASPER, WYOMING ..... Moss Equipment & Supply Co.
MEXICO CITY, MEX. ..... Anahuac Machinery Co.
VANCOUVER, B. C. ..... Universal Equipment Co.

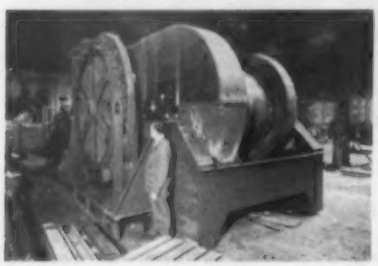
Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

YUBA

BUCKET LADDER AND HYDRAULIC DREDGES for dredging placer properties, harbor and levee construction, channel changes, production of sand and gravel. Hydraulic dredges from 6-inches up; bucket sizes: 2½ to 18 cu. ft., or larger. Digging depths below water as required.



ABRASION RESISTING STEEL SCREENS —flat or revolving for separating, scrubbing, sizing. Holes taper drilled to prevent clogging. All thicknesses from 3/16" up; other dimensions as needed. Abrasion resisting steel plates available from stock.



DOUBLE-DRUM HOIST, 1,000-ton capacity, built to handle 194-foot digging ladder, typifies heavy equipment Yuba can build for you.

For estimates, send us your drawings or specifications. No obligation.

94

YUBA DREDGES — PROVED DEPENDABILITY

YUBA MANUFACTURING CO.

Room 651 • 351 California St. • San Francisco 4, Calif.

A number of promotions of freight traffic executives and officers of the Baltimore and Ohio Railroad at Baltimore, Pittsburgh, Cleveland, Buffalo, and Philadelphia have been announced.

James T. Lean, formerly general freight agent at Pittsburgh, was named freight traffic manager, sales and service (system) at Baltimore, succeeding to the post formerly held by Lloyd W. Baker, now executive assistant to B & O president Howard E. Simpson.

Paul K. Groninger, who has been assistant general freight agent at Cleveland, was appointed to fill the post vacated by Mr. Lean's promotion. Mr. Groninger's Cleveland post will be assumed by C. P. Mabie.

Other Baltimore promotions were those of John J. Collins, formerly assistant to the freight traffic manager, sales and service, Baltimore, who has been appointed general freight agent, sales and service (system), with headquarters in Baltimore. J. Stanley Lowe, also formerly assistant to the freight traffic manager, Baltimore, has been moved up to the post of assistant general freight agent, sales and service (system), and will remain in Baltimore.

Deane Courtright has been appointed district sales representative for Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis, Mo. His territory includes Washington, northern and western Idaho, and Montana. He joined the Leschen organization in its Denver district. He returns to wire rope selling after two years in insurance.

Richard M. McKenna has also been appointed district sales representative for Leschen Wire Rope Division. His territory includes Manhattan, Bronx, and all of Long Island. He has been with Edward Ehrbahr Equipment Company in New York for five years.

Three distributor appointments are announced by Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Mineco, Incorporated, Bartow, Florida, has been named distributor covering the central portion of Florida.

Southern Equipment Sales, Inc., 980 South State Street, Jackson, Miss., will cover the southern half of Mississippi.

Hall-Perry Machinery Company, with offices in Butte, Billings, and Great Falls Montana, has also been assigned the state of Montana with the exception of Lincoln, Mineral, and Sanders counties.

Robert J. Dawson has been appointed manufacturing manager of Caterpillar Tractor Company's new plant in Glasgow, Scotland. Prior to his appointment, he was assistant factory manager of the company's engine factory in Peoria, Ill.

Also named to posts with the new Scottish facility are Hans G. Frommer, production manager, and William I. Cusson, superintendent of assembly. The three men will go to Scotland with their families in late spring.

The Glasgow plant will manufacture Caterpillar D8 and D4 crawler Tractors to help meet the demands of export markets.

F. G. Bemis, Jr., of Minneapolis, Minn., and S. D. Conant of St. Louis, Mo., have been elected to the board of directors of Bemis Bro. Bag Company, St. Louis, Mo., replacing F. M. Ewer, Boston, Mass., and R. D. McAusland, Seattle, Wash., who have recently retired.

Mr. Bemis has been active with the company since 1954 as adminis-

F. G. Bemis, Jr.

S. D. Conant

trative assistant to the vice-president in charge of research and development, in Minneapolis.

Mr. Conant is president of Sligo, Inc., of St. Louis. He is also a director of the St. Louis Union Trust Co.

D. J. Clymer has been appointed advertising manager of the Detroit Diesel Engine Division of General Motors, Detroit, Mich. He joined Detroit Diesel's technical publications department in 1943 and was later in charge of distributor sales management programs and national trade shows and also assistant to the advertising manager.

D. W. Radebaugh has been appointed sales promotion manager of the Detroit Diesel Engine Division succeeding T. L. Guarniere, who was recently made merchandising manager. Mr. Radebaugh joined General Motors Corporation in 1938 as a lecturer with GM's Parade of Progress. He transferred to Detroit Diesel's sales department in 1942.

Why brute loads don't "bust" this screen

● Here's a screen built to take abuse . . . a screen specifically designed to handle large quantities of *big, heavy* rock and ore.

The main frame of this powerful PIONEER Mesabi Vibrating Screen is built from 18" car channel or I-beams and reinforced with 8" wide flange cross beams. Screen frames are constructed from extra-heavy channels, pipe, angles, and bars. Pan side thicknesses range from ⅜" to ½", depending on size of screen. Angle bracing at critical points adds further strength and rigidity. Beefed-up shafts are built to take it.

EFFICIENCY. PIONEER Mesabi screens are not only rugged, but you just can't beat them for fast, accurate separation.

That's because PIONEER'S full circle, forward throw agitation produces an identical, positive motion from one end of the pan to the other. Every inch of this screen works for you.

Near-perfect balance is maintained by placing the shaft at the pan's exact gravitational center and counterbalancing the flywheels to offset the throw of the pan. This gives precise end-for-end, top-for-bottom balance at all times. Since vibration is confined to the pan and not transmitted to the frame, less power is needed and equipment lasts longer.

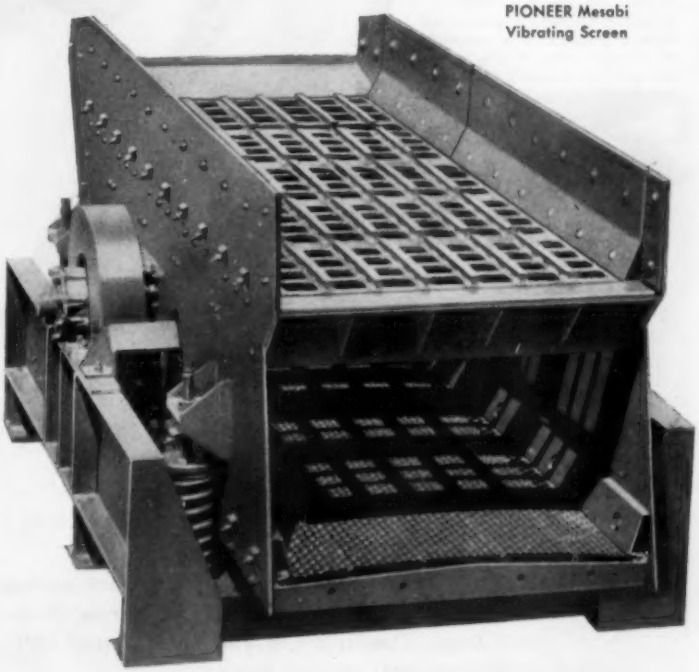
OUTPUT. PIONEER screens are known for their extra capacity. Positive throw, down-hill agitation, and use of the entire screen surface, combine to deliver maximum tonnage.

SPECIFICATIONS

Size	Horsepower	Approximate weight in pounds		
		1 Deck Scalping	2 Deck Scalping	2-Deck Gradation
4'x10'	15	8,900	8,800	8,000
4'x12'	15	10,000	10,000	9,100
5'x10'	20	11,800	11,800	11,000
5'x12'	20	12,800	12,700	12,000
5'x14'	25	13,700	13,600	13,000
6'x12'	30	14,550	14,200	13,800
6'x14'	30	15,800	15,300	14,900

Ask your screen salesman these questions

1. Will frame resist sagging and twisting under heavy loads?
2. Is vibration effectively confined to pan?
3. Do both ends of screen vibrate equally with the middle?
4. How efficient, percentagewise, is separation?



PIONEER Mesabi Vibrating Screen

For detailed features, specifications, and performance data, write Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota, or see your nearest PIONEER Distributor.

BUY BOTH! HIGHER OUTPUT LOWER UPKEEP

Pioneer *Continuflo* EQUIPMENT

Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.
Subsidiary of Poor & Company • Chicago
Please send information on equipment checked.

☐ GRAVEL PLANTS ☐ WASHING PLANTS ☐ MECHANICAL FEEDERS
☐ ROCK PLANTS ☐ BITUMINOUS PLANTS ☐ VIBRATING SCREENS
☐ JAW CRUSHERS ☐ APRON FEEDERS ☐ BUZZER SCREENS (LIGHT DUTY)
☐ ROLL CRUSHERS ☐ ORO FEEDERS ☐ CONTINUFLO CONVEYORS

*Name*_____
*Company*_____
*Address*_____
*City*_____ *Zone*____ *State*_____

Rip-p-p ...and it's open!

Give your customers the time- and labor-saving benefits of Bemis RIPP-NIPP* in Bemis Multiwall Bags. They'll thank you for it... and RIPP-NIPP costs you nothing extra.

Get the details from your Bemis Man.

RIPP-NIPP—A small, closely controlled, machine-made nip cut in the bag at the edge near the sewn seam to start easy tear along the top. Does not weaken the bag.

*Trade-mark

Bemis

General Offices — St. Louis 2, Mo.
Sales Offices in Principal Cities

Hobart C. Ramsey, chairman of Worthington Corporation, New York, N. Y., and Eldon Macleod, president of the Mason-Neilan Regulator Company of Boston, Mass., have announced an agreement for the transfer of the net assets, name and goodwill of Mason-Neilan to Worthington in exchange for Worthington common stock.

The Mason-Neilan plant and facilities would be operated as the Mason-Neilan Division of Worthington, and the entire working force and management staff will be continued in their present positions.

W. M. Steed has been named regional manager, southwest region, with offices in Los Angeles, by Cummins Engine Company, Inc., Columbus, Indiana.

Mr. Steed has been associated with Cummins since 1951, when he joined the diesel manufacturer as a sales engineer. Prior to his recent appointment, he was a regional representative, central region, with offices in Chicago.

W. M. Steed

Robt. C. McDowell

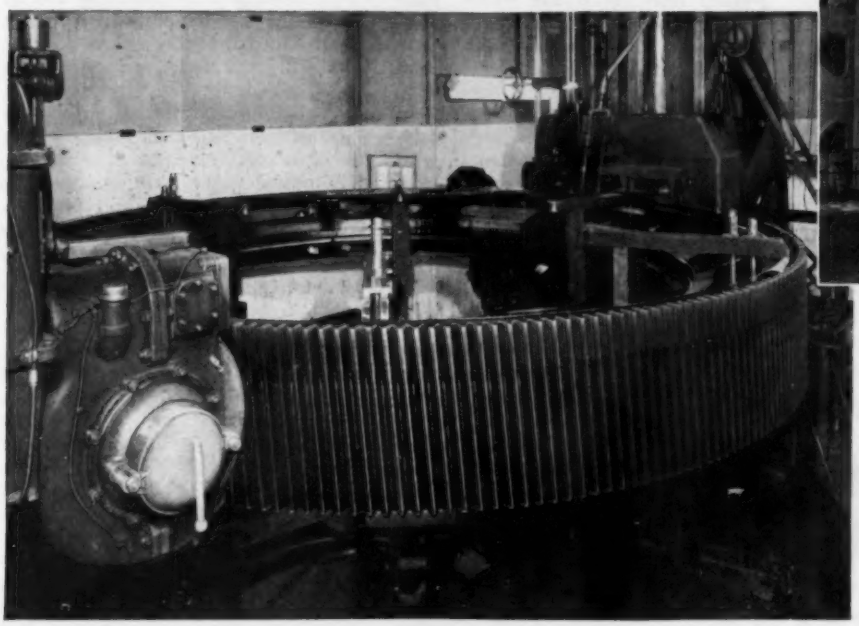
Robert C. McDowell has been elected president of The Wellman Engineering Company, Cleveland, Ohio, engineering and machinery fabricating firm.

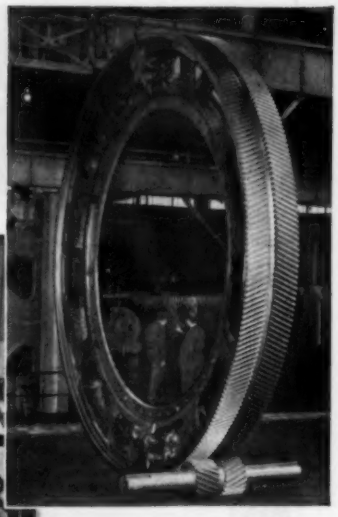
Succeeding Dr. J. C. Hodge, who resigned from both the Wellman presidency and board, Mr. McDowell is also president of McDowell Company, Inc., industrial engineers and contractors. He became chairman of the board of Wellman Engineering in 1954 when McDowell Company acquired a majority of the former company's outstanding stock. He will serve as both chairman and president of Wellman.

Paul M. MacKinney, formerly vice-president of Imperial Construction Equipment Co. of Northlake, Illinois, has purchased all rights to the Imperial Electric Tel-A-Slump, manufactured by Concrete Controls Corporation, 1012 East Geneva Road, Wheaton, Illinois.

Gears by FALK

. . . a good name in industry





ABOVE: In foreground, split ring herringbone gear, 16¾ feet in diameter. In background, a single helical gear is being rough-cut on special hobbing machine (which also can cut herringbone or spur gears).

LEFT: Split ring gear receiving final cutting on special hobbing machine, designed and built by Falk. It is operated in a temperature-controlled room to minimize dimensional variations.

Here's how MODERN GEARS can SAVE MONEY for you . . .

• Are you making the mistake of driving your costly mills and kilns with gears of antiquated design—or with gears made to a price, rather than to the topmost standards your operation deserves?

Falk Helical Gears are the most efficient gears (98½%) you can buy. They can bring you these substantial savings:

1. They last longer, hence reduce your over-all gear investment.
2. Pinion replacement can be sharply reduced when gears are properly proportioned and installed, and adequate lubrication and enclosures are provided.
3. They give better performance and longer life to your driving and driven machinery.
4. Their higher possible ratios permit use of higher-speed motors—a saving in motor costs and in power bills.

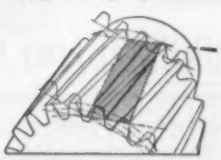
As the country's largest supplier of precision gearing, Falk is the manufacturer best equipped to *recommend without prejudice* the exact gear most suited to your specific application. Whatever type gear your job demands—single helical, herringbone or spur—Falk has unsurpassed facilities to engineer and produce it.

You are invited to contact any Falk representative—also, **write for Report 6170,** "Advantages of Helical Gearing"

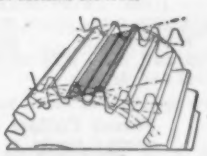
THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 8, WISCONSIN

GEAR FACTS FOR ENGINEERS

The greater capacity of Falk Helical Gears, whose teeth are cut obliquely across face, is shown by the sketches below. When helical gears mesh, two or more teeth are always in contact; they share the load. Result: maximum contact area, greater capacity and strength.



By contrast, on gears with teeth cut straight across the gear face (as in spur gears), there are alternately one or two teeth in contact when gears mesh. Result: Very small contact area. The load-carrying capacity (rating) is determined by minimum contact conditions when but one tooth sustains the load.



On the basis of comparative sizes of contact areas of the two gear types, the high capacity of helical gears over competing types is apparent. Engineers, operators and maintenance men who have experienced the advantages of Falk Helical Gears are unwilling to "settle for less".

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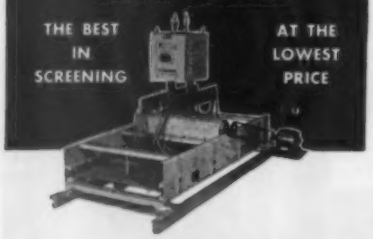

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- UNIFLEX VIBRATORS
- UNIVIBE RIDDLES

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YOUR OPPORTUNITY!

UNUSED Army Trucks
2½, 8½, 5-ton

GMC-DIAMOND T & INTERNATIONAL 6x6's

- From Government Storage!
- Unused and Guaranteed!
- Factory-New Condition!
- Delivered on Approval!
- Reconditioned Trucks Also Available!

Tandem axle trucks with front wheel drive, 10 forward speeds, overdrive, brand-new mud and snow tires. Carry maximum loads, give extra power you need in "rough going" . . . at LESS, often half the COST of conventional new trucks.

For Specifications, Prices, Delivery:
Phone Collect
MILTON V. YOOMBS, Jr.
Sales Manager

MEMPHIS EQUIPMENT Company
CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS
766 SO. THIRD ST. MEMPHIS, TENNESSEE

Stephens-Adamson Manufacturing Company, Standard Products Division, announces the opening of a regional warehouse at 650 Murphy Avenue, S.W., Bldg. E, Unit 18, Atlanta, Ga. The new warehouse will stock belt conveyor components, car loading machinery, winches, car pullers, transmission equipment and allied lines. It is the second such unit to be established by Stephens-Adamson in the last six months and is designed to serve distributors and territorial sales offices in the Southeast.

Al Steele is the territorial sales manager located in Atlanta, with Don Dolan holding a similar post in Raleigh, North Carolina.

Brunner & Lay, Inc., Franklin Park, Ill., has announced a large expansion program. Exact details have not been released but it is known that this program will include a new plant location, a new plant at an existing location, building additions at present locations, and the purchase of additional production equipment.

The companies and their president, Fred J. Brunner, are optimistic about the future of the quarrying industry, and the program is intended to keep them abreast of this ever growing business.

Atlas Powder Company, Wilmington, Del., will award eight $1,000 college scholarships again this year. The grants will go to students who will be seniors during the 1956-57 college year, majoring in chemistry or any branch of engineering.

Scholarships will be awarded on the basis of scholastic records and the recommendations of faculty members who are acquainted with the applicants. Extra-curricular activities and financial need will also be factors.

J. H. Hill, manager of the ore testing division of Western Machinery Company, San Francisco, Calif., has announced the addition of two men to his department.

Lyle Hallberg, new mineral testing engineer, has been active in mining operations in Idaho, Montana, and Washington.

Alvaro Cardona, now a laboratory helper in the ore testing division was previously engaged in mining activities in El Salvador, Central America, where he also served as a grammar school instructor and as principal of the Adult Training School with two years on the Faculty of Law, University of El Salvador.

St. Regis Paper Company, New York, N. Y., announces that Willard J. Dixon has retired as vice-president. He became assistant secretary of the company in 1929, secretary in 1937, and vice-president in 1938, and has been a director of the company since 1941. His resignation as secretary in 1955 and his current resignation as vice-president are in line with the company's retirement plan. He will continue as a director and will be available to the company as a consultant.

The company also announces the appointment of Frank D. Instone as assistant sales manager of packaging equipment of the Multiwall Packaging Division. He was previously a branch sales manager for the Richardson Scale Company, Clifton, New Jersey.

The T. L. Smith Company is erecting a new plant in Lufkin, Texas, located on a site just west of the city. Present plans call for production to start early this spring. This plant will service the south and southwest area of the United States. In the beginning only the Smith truck mixer line will be manufactured in Lufkin.

A district sales office will be established at the Lufkin plant. Parts shipments for the area will come from this plant and service personnel will be located there.

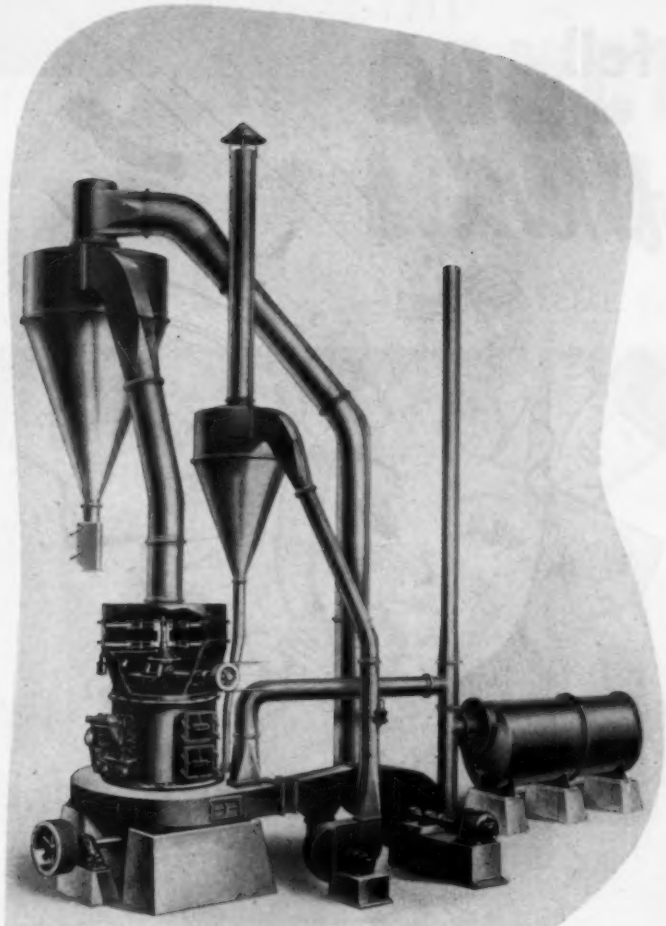
The following firms have been appointed to sell and service the Michigan line of tractor shovels and excavator cranes, products of the Construction Machinery Division of Clark Equipment Company, Benton Harbor, Mich.

Merts Equipment Company, P. O. Box 331, 300 S. Slappey Drive, Albany, Ga., will handle most of Georgia.

Mainline Equipment Company, Inc., 818 S.W. Ninth Street, Des Moines, Iowa, will handle the Michigan products in eastern Iowa. R. V. Hicklin is president and general manager of Mainline Equipment Co.

R. A. Young & Son, Inc., 301 South Tenth Street, Fort Smith, Ark., will handle Michigan products in most of Arkansas. The company has a branch office at Fifth and Rector Streets, Little Rock, Ark.

The Colorado Fuel and Iron Corporation, New York, N. Y., has moved its Chicago district sales office and warehouse to 3838 West 51 Street, Chicago, Ill. District sales manager is L. J. Renner.



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Today's advanced design in *roller mill equipment* brings you the latest operating features to help reduce costs and improve the quality of your products.

If you want to hold the competitive advantages of modern production methods, then install the Raymond Whizzer-type Roller Mill for grinding limestone, gypsum, clays and similar non-metallic minerals.

- Pneumatic Feed Control keeps a maximum "load" on the mill under all conditions . . . a major factor in Raymond Roller Mill economy.
- Throw-out Attachment automatically rejects ungrindable impurities, insuring maximum capacity, uniformity and refinement of the product consistent with amount of impurities which can be discarded.
- Flash Drying Accessories for removal of surface moisture and delivering a fine, dry, free-flowing finished material.
- Integral Whizzer Separator to give wide range fineness control by instant adjustment, and to increase capacity.
- Oil Journals and internal lubrication that reduce lubrication costs and overall mill maintenance.

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Raymond Division

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SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd. Montreal, Canada

no wonder they fell

for each other!

ALBEMARLE with its own vast resources of Kraft Papers, Raymond with its extensive manufacturing facilities, are now "wedded" as a wholly integrated operation for producing Multiwall Paper Shipping Sacks to meet your most exacting needs.

Any required number of plies, clean colorful printing and the finest Multiwall Kraft Papers, including such specialties as asphalt laminated kraft, colored kraft, creped kraft, waxed kraft and wet-strength kraft—all direct from the Albemarle Mills.

With the assurance of prompt deliveries always!

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MULTIWALL PAPER SHIPPING SACKS

For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete

APRIL 1956

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

One of the Mountains of Volcanic Scoria Cinders near Aden, N. M., Owned by Atlas Building Products Company, El Paso, Tex.

Aerial view of Sewage Treatment Plant, Valparaiso, Indiana. Duraplastic cement provides protection against freezing-thawing weather.

Construction view of tank shows Duraplastic-made concrete in place. Duraplastic gives excellent placeability and durability.

"Our contractors are completely satisfied with Duraplastic*"

. . . said Ready-Mix supplier Byron Smith, President of Smith Nuppnau Ready-Mix, Inc., Valparaiso, Indiana. "Duraplastic's ability to fortify concrete against freezing-thawing weather is outstanding, and the lack of segregation and reduced finishing time please contractors."

You, too, will get more durable, more uniform concrete with Atlas Duraplastic air-entraining portland cement, because you get a more plastic, more cohesive mix. Less mixing water is required for a given slump . . . segregation and water gain are minimized.

YET DURAPLASTIC COSTS NO MORE than regular cement—requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write:

UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL (USS) CORPORATION SUBSIDIARY

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OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*

*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

CP-D-161-3

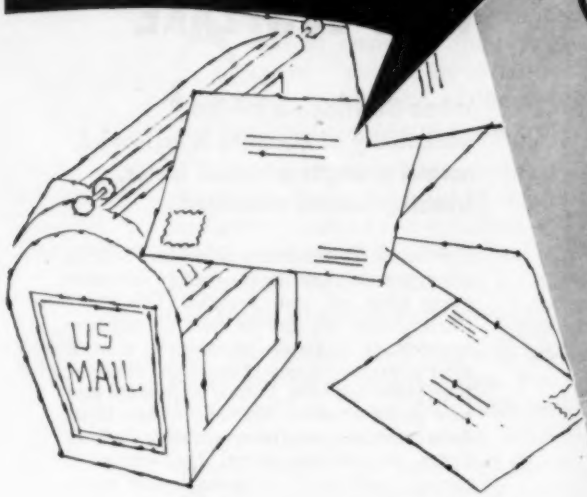
AIR-ENTRAINING PORTLAND

Atlas® Duraplastic Cement

MAKES BETTER CONCRETE AT NO EXTRA COST

United States Steel Hour—Televised on alternate Wednesdays—See your local newspaper for time and station.

An important NEW CATALOG for your files...



Write today for your FREE COPY!

Are you faced with rising costs and stiffer competition? How does your equipment compare with that of your competitors? It might be real smart—it might even be "profit-insurance"—to replace one or more of the truck mixers you now own with new Westinghouse Transit Mixer units!

The feature and fact-filled bulletin illustrated above tells the complete Westinghouse Transit Mixer story. It is a *must* for all profit-minded, ready mixed plant owners interested in that *Extra Profit Advantage* that comes from operating the best, most modern equipment.

Westinghouse Transit Mixers have several exclusive—and many—profit-building, cost and time-cutting features you should know about!

Make sure you get a copy of the important new bulletin offered here, and ask your distributor for a W.T.M. demonstration soon.

WESTINGHOUSE TRANSIT MIXER DIVISION
LeTourneau-Westinghouse Company
INDIANAPOLIS • INDIANA

THE INDUSTRY'S NEW PACE-SETTER

CLIP AND MAIL COUPON TODAY . . .

Westinghouse Transit Mixer Division, CM-564
LeTourneau-Westinghouse Co., Indianapolis, Indiana
Please send free illustrated bulletin on the new Westinghouse Transit Mixer.

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Company .....
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City ..... Zone ..... State .....

DOW

BETTER CONCRETE FASTER WITH DOWFLAKE

When Dowflake is added, workability of concrete is improved, normal strength achieved faster, freezing hazard minimized.

Dowflake® (Dow calcium chloride, 77-80%) gives you stronger, better quality concrete every time, all year around. This ever-thirsty chemical assures you of stronger concrete at all ages—for example, a week after pouring it is nearly one-third stronger than plain concrete. Forms, equipment and men go on to other jobs sooner. And Dowflake makes concrete more workable. It flows faster. Needs less water. Uniformity of curing, uniformity of strength and many other advantages are yours with Dowflake.

You benefit from faster setting time. Plain concrete, without Dowflake, poured at 40°F. requires an average of 6¾ days to reach safe working strength. This same concrete *with* Dowflake needs only 2¾ days—a savings of four full days! At 32°F. Dowflake saves you 5¾ days—at 25°F. it's actually 35 days!

Save man-hours, save money, increase efficiency—and get a stronger, better quality concrete faster with Dowflake. Dowflake can be added at the plant or to the mixed concrete in the truck shortly before discharge. Available in 25-pound and 100-pound moistureproof bags. Write THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. IN 781R-1.

(TOP) The 25-pound bag is an accurate measuring unit. Add one bag to a five-yard batch to obtain a 1% Dowflake mixture. Two bags for 2%. Mix thoroughly. Easy as that—and no chance for error, no awkward bucket measures.

(CENTER) Concrete flows faster, is more workable and produces a greater strength gain when it contains 1 to 2% Dowflake.

(BOTTOM) Your assurance of better concrete work every time is Dowflake!

you can depend on DOW CHEMICALS DOW

The CONCRETE MANUFACTURER

April 1956

Cement—Storage and Price Security

A COMMENDABLE recommendation was made the other day by one of cement's "best salesmen"—a ready-mixed concrete producer—toward the attainment of the above two goals and to the consequent elimination of the twin-barreled menaces to the industry—shortages and short-term price protection—now plaguing such producers.

As we listened to this eloquent plea, we were struck with the simplicity of accomplishment of these goals if both the producers of cement and of its kindred end products of concrete were to realize their respective shortcomings. A background of complacence in one group, in condoning certain unfair practices by the other, has allowed the present inconsistent situation to develop.

If the ready-mixed concrete and concrete products producers would anticipate their requirements for cement, from month to month, and then would sit down with their cement producers and work out a more flexible allotment, including some mill storage of cement during slack seasons, they might knock off the recurrent peaks of the shortage problem. If contracts guaranteeing prices could be written for a period of a year, with price changes made effective only during the winter months when demand is low, it seems to us that the bogey of price insecurity and enforced partial absorption of "two-week" price increases would disappear overnight.

While such a solution may appear simple to us, we hasten to say that we know that there are other considerations in determining allotments of cement which are probably paramount in the mind of the cement producers to the 50 percent of their production now taken by these ready-mix and products producers. We realize that the cement producers have been unable in the last five years to accumulate any surplus to put into winter storage for anyone, because of the 100 percent-plus demand for their product. We realize that the demand for more and better highways will place a high priority on the cement for these arteries of the nation's trade. We realize that the *per capita* use of cement is zooming upward each year. Yet, in the face of all this, we still maintain that the problems can be whipped by sincere cooperation in planning.

It has been said by some pessimistically-minded individuals that the cement industry is in danger of creating over-capacity. In view of the predictions of experts possessing authoritative data on the subject, which tie in future construction and consequent production increases to population growth, we seriously doubt that the ill-planned over-expansion of cement capacity of the thirties will ever again be repeated. Not so long, at least, as 4,000,000 babies per year is considered normal production.

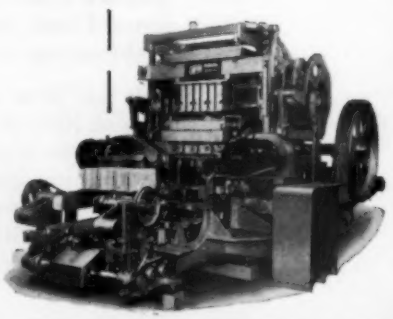
Roy L. Peck

World Wide Service...

In every corner of the globe, Besser Vibrapac machines are producing high quality block . . . . faster . . . . automatically. And wherever Vibrapacs go, Besser service goes with them . . . . to keep the machines running at peak efficiency and to help meet the ever-growing demand for concrete block.

Vibrapac Block machines are universally acclaimed for their unusual performance records and dependability. They have twice the power of other machines . . . . operate with remarkable smoothness . . . . produce high quality block on a continuous production basis, month after month, year after year. The operation is fully automatic. Green block is power removed. Off-bearer merely guides the power hoist. Elimination of downtime cuts block costs to rock bottom.

More than 50 years of pioneering leadership are back of every Vibrapac machine and the Besser Service that goes with it . . . . your assurance of enduring satisfaction. Contact the Besser representative near you for further information, or write:



BESSER COMPANY

World's Leading Manufacturer of Concrete Block Machinery

ALPENA, MICHIGAN, U.S.A.

News of the Concrete Industries

Ohio Ready-Mix Assn. Holds Annual Breakfast At N.R.M.C.A. Convention

A breakfast meeting was held by the Ohio Ready Mixed Concrete Association at the Conrad Hilton Hotel, Chicago, Ill., on February 14, in connection with the joint annual meeting of the National Ready Mixed Concrete Association and the National Sand and Gravel Association. This meeting was attended by 218 persons, the largest attendance in the last few years, according to Charles P. Dittrich, president of the local association.

Mr. Dittrich stated that the group presently numbers 138 members, who include 8 new active and 30 new associate members, within the last year. He introduced one of the guests, R. P. Mumford, Beckley and Meyers Company, Springfield, Ohio, who gave a report on the 1956 short course in concrete, which was sponsored by the association. This school was held on January 16-17, 1956, at Akron, Ohio, and was attended by 166 persons from ready-mixed concrete plants. The next such school will be held at Dayton, Ohio, on January 14-16, 1957.

J. A. Nicholson, chairman of the policy committee of the association, gave a report on the activities over the last year. Other members of this committee are Ralph H. Anderson, Anderson Concrete Corporation, Columbus, Ohio, and George J. Frye, Dayton Builders Concrete Company, Dayton, Ohio. Mr. Nicholson commended the promotion work done by the association in behalf of the ready-mixed concrete producers of the state, saying that the small budget of only $9,500 had been wisely expended. He also discussed finances and the necessity of increasing dues.

Hal G. Feraud, executive secretary, Southern California Ready Mixed Concrete Association, the guest speaker, described in his talk the labor negotiations carried on by that association's committee of six members in effecting the 1955 agreements with unions. He stated that the committee represented the 29 ready-mixed concrete member producers, as well as the aggregate producers, located in the metropolitan area of Los Angeles, Calif. This group produced over 20,000,000 tons of aggregates and over 3,500,000 cu. yd. of ready-mixed concrete annually. In fighting the three-months' strike against the industry in 1955, half of a budget of $120,000 had been used before a joint agreement was reached. He warned all producers to consider carefully the cost of such controversies.

The speakers' table at the annual breakfast meeting of the Ohio Ready Mixed Concrete Association. Left to right: Ralph H. Anderson, Louis C. Schilling, J. A. Nicholson, Charles P. Dittrich, Hal G. Feraud, R. P. Mumford, and Claude L. Clark.

Robert P. Gregory, 77, owner and operator of the Gregory Concrete Products Company, Louisville, Ky., died on Dec. 8, 1955. His son, Marion A. Gregory will continue the operation of the firm.

Coming Events

April 9, 10, 1956—Chicago. **14th annual meeting, Mid-West Ready-Mixed Concrete Association. Drake Hotel.**

April 12-14, 1956—Denver. **Sixth annual convention, American Concrete Agricultural Pipe Association. Brown Palace Hotel.**

May 16-18, 1956—Hollywood, Fla. **Second annual convention, Prestressed Concrete Institute. Hollywood Beach Hotel.**

Winkrete Prestressed Plant New Venture at Warners, N.Y.

Set up as a subsidiary of the D. W. Winkelman Company, Inc., public works contractor of Syracuse, N. Y., the new Winkrete Company plant located adjacent to the company's Haydite production plant at Warners, N. Y., will manufacture precast and prestressed concrete.

Plans include the construction of a large modern facility having an automatic concreting plant, bridge cranes, etc., for the mass production of both precast lightweight sections and prestressed sections. The plant will feature a production line for molds up to 33 ft. long.

Personnel associated with the new business are K. E. Brown, vice-president; James Kane, sales representative; and Harold Anson, engineer and plant manager. Mr. Anson was previously associated with the Formigli Co., Berlin, N. J., and the Freyssinet Co., New York, N. Y.

Pittsburgh Coke Collaborates With American-Marietta Co.

Pittsburgh Coke and Chemical Company, Pittsburgh, Pa., through its concrete pipe division on Neville Island, has formed a joint venture with American-Marietta Company, Chicago, Ill., to produce large-diameter concrete pipe through a new company to be known as the Allegheny Concrete Pipe Associates, Inc.

Some 60 miles of large-diameter pipe has already been contracted to supply Allegheny County Sanitary Authority's sewer system.

How 1 BANTAM earned $18,000 in only 10 months!

handled sand and gravel and other excavating jobs

Busy BANTAM owner Weldon Laurence of Weldon Laurence & Sons, Prophetstown, Illinois, is talking from experience about a BANTAM's bigger payoff. He formerly owned a larger dragline, too cumbersome, too costly to operate and maintain for his work—excavating gravel from a river bed into stockpile and truck loading it . . . as well as other digging jobs, Laurence switched to the low-cost BANTAM method.

In his own words, businessman Laurence says: "I find the BANTAM ideal for gravel and basement and ditching work. It has the ability to move easily. I like its ease of operation. We'll average $18,000 a year income from our BANTAM, working only 10 months."

That's not all. This BANTAM booster also reports: "My BANTAM has worked harder and more in the past 2 years than other rigs in this area do in 5 years." Laurence now has his second BANTAM!

You can cut your costs, too, with a BANTAM! Mail the coupon.

New BANTAM Crawler Tumbler and Shoe Design Cuts Track Maintenance Costs!

New drive tumbler has mounted pins which provide a *rolling* contact between hardened rollers and pins and track lugs—virtually eliminating wear and damage caused by excessive abrasion. With BANTAM design, driving lugs of shoes have an involute or curved surface for correct engaging action during travel. Fast on-the-job replacement eliminates costly down time and work delays.

World's Largest Producers of Truck Cranes and Excavators

T-35

CR-35

SCHIELD Bantam Co.

Schield Bantam Co. CP 22
298 Park St., Waverly, Iowa
Rush me full details on ____ Crawler BANTAM, ____ Truck-Mounted ____ Self-Propelled.

Name_____
Position_____
Company_____
Address_____
City_____ State_____

● This structure, reportedly the world's largest drive-in Cinema Scope movie screen, has been completed in the Pittsburgh area by the Echo Drive-In Theatre. Built entirely of Besser Vibrapac concrete block, the structure houses six floors of office space in addition to serving as a movie screen. Over 33,000 concrete block, made by Charleroi Supply Company, Charleroi, Pa., were furnished for the job.

American Vitrified Products Announces Price Increase

Effective immediately, there will be a price increase of approximately 5 percent on all concrete and clay products manufactured by the American Vitrified Products Company, according to E. L. Miller, president.

"Increased labor costs and increased costs of raw materials, such as coal, cement, and steel, have resulted in a higher cost of production," Mr. Miller stated.

Perma-Stone Sales Meeting Draws Attendance of 200

Perma-Stone Company, Columbus, Ohio, held its annual sales convention on February 29 and March 1 to 2, at the Brown Palace Hotel, Louisville, Ky., according to a recent announcement by Paul E. Linberg, general manager.

Among the speakers were Senator Alben W. Barkley and James Garfield Stewart, judge of the Supreme Court of Ohio. More than 200 Perma-Stone dealers from every state in the union and from several foreign countries attended the meeting, judged the largest gathering of its type in the 27 years the company has been in business.

Colonial Sand and Stone Company, Inc., Astoria, Long Island, N. Y., suppliers of ready-mixed concrete in the New York metropolitan area, plans to establish a research laboratory on a site adjacent to its present facilities. This announcement was made by Anthony Pope, president.

Here's why you can

HAUL BIGGER LEGAL PAYLOADS

BLAW-KNOX *Hi-Boy* TRUKMIXERS mount on short wheelbase trucks

Only Short Wheelbase *MANEUVERABILITY* gets into tight spots quickly

Mounting the motor at the rear and the transmission at the end of the combination pedestal water tank, permits center of weight to be moved 20″ forward so the front axle carries maximum legal load and allows use of shorter wheelbase conventional cab type trucks. These exclusive design features allow you to haul extra payload every trip and make more trips per day with Blaw-Knox Hi-Boy TRUKMIXERS. With Hi-Boys mounted on shorter wheelbase, more maneuverable trucks, you get loads through traffic, onto the job site and up to the forms *faster.*

BLAW-KNOX

Dozens of other practical, profitable features that assure best weight distribution and most efficient loading, mixing and delivery, have been incorporated in 4½, 5½ and 6½ cu. yd. Hi-Boys. Have your nearest Blaw-Knox distributor explain them to you today.

BLAW-KNOX COMPANY

CONSTRUCTION EQUIPMENT DIVISION

35 Charleston Avenue • Mattoon, Illinois

A New

FORM OIL

ALOX 436

New Concrete Form Lubricant Improves Quality of Product . . . Decreases Handling and Maintenance Costs for Forms

- **Blends with light fuel oil or Kerosene.**
- **Prevents Sticking.**
- **Gives Smoother Finish.**
- **No Discoloration.**
- **Always Uniform.**
- **Never Rancid.**
- **Protects Forms From Rust or Corrosion.**

Alox 436 when added to kerosene or light petroleum oils makes a highly effective release compound that prevents concrete from sticking to molds or forms. It can be applied by brushing or spraying. After you have once tried Alox 436, you will never be satified with any other material. Use handy coupon below for additional information and sample.

Gentlemen:

We use_____gallons of form oil per year and would like a sample of Alox 436 to test. Also please send instructions for using.

NAME_____

COMPANY_____

ADDRESS _____

CITY_____ ZONE_____

STATE_____

ALOX CORPORATION
3960 Buffalo Avenue
Niagara Falls, N. Y.

Western Pipe Assn. Meeting At Fresno, Calif., April 25

The annual meeting of the Western Concrete Pipe Association will be held at the Hacienda Motel, Fresno, Calif., on April 25 to 27, 1955. This association consists of 150 members residing in ten Western states, Alaska, and British Columbia, who produce concrete pipe of all types. Associate members are suppliers of machinery, equipment, and services to the concrete pipe industry, and cement manufacturers in the Western states.

Details of the program of scheduled talks have not been worked out. Any information relative to this association or to the above annual meeting may be obtained from H. W. Chutter, secretary, P.O. Box 152, Fresno, Calif.

William C. Green Appointed To Texcrete Affiliate Staff

William C. Green has been named chief of the engineering department of Texcrete Structural Products Company, an affiliate of Texas Industries, Inc., Dallas.

Mr. Green was previously a structural engineer with the Bureau of Yards and Docks, Department of the Navy, Washington, D. C. Earlier he was with the Industrial Bureau of Standards, handling research on structural properties of lightweight concrete aggregates. He is a graduate of Rensselaer Polytechnic Institute.

Texcrete Structural Products Company produces precast concrete structural elements made with Haydite lightweight aggregate.

William C. Green

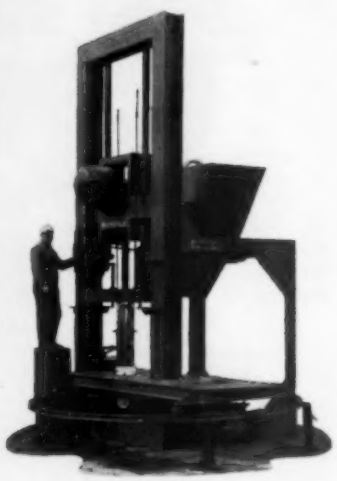
SIMPLICITY plus VERSATILITY

HYDROTILE

CUTS LABOR COSTS and BOOSTS OUTPUT

A Real Profit-Maker

for both large and small size concrete pipe



RIGHT-HAND MODEL

FOUR PIPE MACHINES

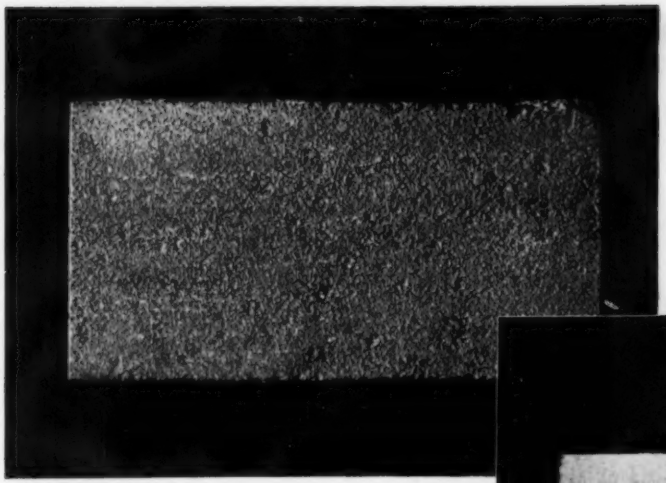
Featuring fingertip hydraulic controls, powered turntable, bell packer, direct drive with seven packershaft speeds just by shifting gears.

SIX DRAIN TILE MACHINES

Featuring full automatic operation.

Write for Bulletin and complete Details

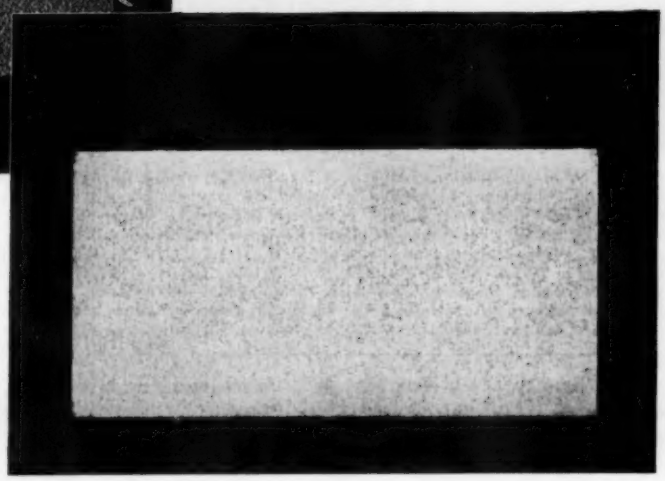
NASHUA TILE CO.
Nashua, Iowa



ORDINARY BLOCK Without NR PLASTIC—
ROUGH FINISH, DARK COLOR

IMPROVED BLOCK* With NR PLASTIC—
SMOOTH FINISH, LIGHTER COLOR

* Manufactured at HOERNING'S CONCRETE PROD. CO., Menasha, Wisconsin.



With
JUST *ONE* TABLESPOON OF
DRY, POWDERED

NR PLASTIC

PER BAG OF CEMENT!

GREATER PLASTICITY IN THE GREEN UNIT — PLUS 20% LIGHTER COLOR...

Cost...½c per Bag of Cement!

Hydrate ALL the cement in your dry block and pipe mix . . . with just *one* tablespoonful of dry, powdered NR PLASTIC per bag of cement. Cost.....½c per bag!

YOU'LL GET . . . . . .

A 20% lighter colored unit with a more thoroughly wetted cement paste! Complete hydration through complete saturation without adding more water! Sharper corners . . . better texture . . . smoother, denser surfaces through greater compaction! Faster, cleaner feeding into . . . and stripping from . . . the mold box! 50% reduction in wear on mold box liners! Greater plasticity in the green unit through absolute dispersion of water and cement . . . and . . . complete coating of all the aggregate particles! Simple and economical to use . . . add dry as it comes from the container! Cost ½c per bag of cement!

MAIL COUPON TODAY

Write for literature and free 8 lb. sample of NR PLASTIC.

Edick Laboratories
427 W. National Ave., Milwaukee 4, Wis.

Gentlemen, Please RUSH Sample of NR PLASTIC

NAME ..... **TITLE** .....

FIRM .....

ADDRESS .....

CITY ..... **ZONE** ..... **STATE** .....

Edick LABORATORIES

427 W. National Ave. Milwaukee 4, Wis.

The new board of trustees and officers of the Ohio Concrete Block Association, elected at the group's third annual convention in Akron, Ohio, February 7 and 8, 1956. Seated (left to right): John F. Royer, Columbus, secretary; Howard H. Renker, Cleveland, treasurer; William H. Ebling, Lima, first vice-president; Vincent J. McDevitt, Mogadore, president; James W. Wells, Jackson, second vice-president. Standing (left to right): O. H. Seeger, Columbus; E. R. Laughbaum, Crestline; B. A. Wettig, Dayton; Harry R. Engster, Warren; Oren C. Wheeler, Fremont; Clem Beals II, Springfield—all trustees; and Sam C. Davis, Dayton (retiring president). Not in this picture are two more newly-elected trustees: William A. Rodger, Chillicothe; and E. M. Johnson, Cincinnati.

The Bradley Block Company of Cleveland, Tenn., is completing an expansion program which includes the installation of new storage capacity and an automatic concrete-block machine which will step up production about 30 percent, according to the local press. The company also plans to add ready-mixed concrete to its line.

Add a New Profit-Maker

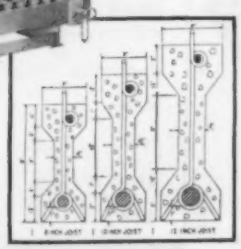
increase your volume

PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.

Only Small Investment Required!

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.



KIRK & BLUM

Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

Personalities in the News

W. C. Buchanan has been named manager of the Paris (Tex.) Concrete Company, a subsidiary of the Sherman Concrete Company. He was formerly manager of the Bowie (Tex.) Ready Mixed Concrete Company. Glenn Lindsey will take Mr. Buchanan's place as manager of this company.

George H. Ehlen has been admitted to partnership in the Portland (Oreg.) Concrete Pipe and Products Company, as recently announced by Floyd L. Martin and Hugh P. Ford, partners in the company. Mr. Ehlen is currently a director of both the Oregon Building Congress and the Associated Concrete Products Manufacturers, Portland, Oreg.

Gordon W. Walker, president of Friend and Company, Petersburg, Va., has been elected president of the Virginia Concrete Association, Richmond, Va. Other officers of the association are Carolyn B. Nettleson, Covington, Va., vice-president; Mont Hubbard, Altavista, Va., secretary-treasurer; and John W. Mitchell, Richmond, Va., executive secretary.

James W. Schofner has been appointed manager of the concrete block division of J. E. Evans Concrete Products, Inc., Shelbyville, Ind., as announced recently by Paul K. Welsh, general manager.

Robert A. Brennan has been named to the newly-created post of general manager of Neff Concrete Products Company, Danville, Ill.

Earl Turner has been named manager of a new $130,000 ready-mixed concrete plant built in Carrollton, Tex., by Wamix, Inc., Dallas, Tex., producers of concrete. Another installation, a modern automatic mobile batching plant costing $100,000, has been built at South Oak Cliff, Tex.

Florida Firm's New Plant Turns Out Floor, Roof Units

Engineered Products, Inc., Hialeah, Fla., has built a new plant for the production of a new, precast floor and roof system, to be known as Adapt-o-Core, according to Donald L. Smith, president.

The product is described as a reinforced precast beam with a semi-circular void on each side. The units making up the beam have the contact surfaces ground to fit tightly against each other. Steel strands are used to place high compression in the units to form the finished floors.

4 trucks or 40

2-way radio means more profit for any size fleet!

If you've thought 2-way radio was only good for the big ready-mix operator with dozens of trucks—take a look around. Some of the most enthusiastic radio users have fleets of fewer than 10 mixers.

It isn't the number—it's the *efficiency* that tells the profit story. Radio dispatching helps you run trucks at peak productivity by trimming out the wasted miles and minutes.

Check these ways a Motorola 2-way radio communication system can save you money and bring in new business:

- ***By rerouting mixers, when necessary, to alternate customers—on short notice, while trucks are en route.***
- ***By freeing your heavy trucks from partial loads.***
- ***By releasing pre-mix plant crews immediately following the day's final pour.***
- ***By slashing down-time on disabled mixers through speedy repairs.***
- ***By giving better service to contractor customers via radio relay of instructions.***
- ***By eliminating all telephone calls from drivers.***

When you are buying radio, you'll soon see why ready-mix companies choose Motorola *more often* than all others *combined*. One big reason is that it's built for rugged use —designed to *outlast* several trucks. Let a Motorola Engineer show you the many other reasons why Motorola tops the field. He'll also show you how Motorola 2-way radio will quickly pay for itself by cutting costs . . . then go on to earn extra profits for you every year. Write, phone, or wire TODAY.

MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
ROGERS MAJESTIC ELECTRONICS LTD., TORONTO, CANADA

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service— specialized engineering . . . product . . . customer service . . . parts . . . installation . . . maintenance . . . finance . . . lease.
"The best costs you less—specify Motorola."

New Plants, Expansions Noted in R.M.C. Industry In All Sections of U. S.

Green & Clemons Concrete Company is the name of a new firm in Scottsville, Ky., recently opened for the production of ready-mixed concrete.

Mt. Pleasant (Ia.) Ready Mixed Concrete Company has purchased the George Kitch Ready-Mix plant and equipment in Mt. Pleasant, and will combine the business of both firms in an expanded operation to include new equipment and bins.

Trap Rock Industries, Inc., producers of ready-mixed concrete, with plants located at Pennington and Kingston, N. J., have recently opened the third plant at Pennsauken, N. J. A fourth installation will be built at Runnemede, N. J., in which will be incorporated a 10-cu. yd. central plant mixer. The Pennsauken plant has a capacity of 2,000 cu. yd. daily, according to the announcement by company officials.

Kings County Ready Mix, Inc., Hanford, Calif., recently opened a new plant for the production of ready-mixed concrete. The manager of the new operation is William J. McClive, secretary-treasurer of the organization. Reported to have one of the largest capacities for the production of concrete in the San Joaquin Valley, the plant will incorporate a 500-bbl. cement silo and a 2½-cu. yd. central plant mixer, to serve the fleet of 6-cu. yd. truck units used for delivery of concrete.

Cement Shortage? One User Who Did Something About It

Terminal Ready-Mix, Inc., Lorain, Ohio, was bothered last season by a cement shortage which frequently hindered operations in providing concrete for the company's paving work. It was decided to do something about it! Sam Falbo, company president and head of the Falbo Construction Company, suggested that the firm invest $25,000 for a new concrete silo, 80 ft. in height and 22 ft. in diameter, to hold 7,500 bbl. of cement. The idea was accepted and carried out.

This supply, to be accumulated during the winter months when the demand for cement is low and permits the company's supplier to fill the silo, supplements the cement held in two smaller silos and two bins, and provides a total cement storage of about 30 carloads. It is planned to hold the new supply of cement until shortages impend. Then the extra capacity will provide an adequate buffer against possible delay in operations.

Marietta Concrete Corporation, Marietta, Ohio, designed and constructed the silo on a 12-ft. deep foundation located on a hill adjacent to the company's plant bins, to which the cement will be pumped when needed.

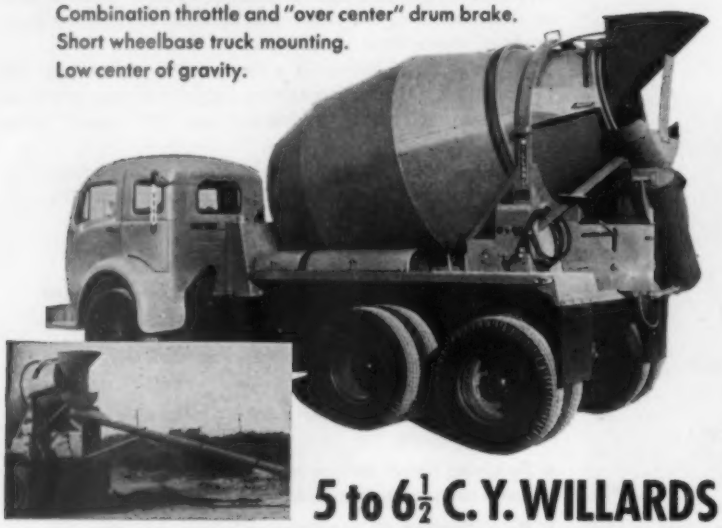
A. L. Chapman, superintendent-engineer of Terminal, who supervised the erection of the silos, feels that it is going to be highly necessary for ready-mixed concrete producers and others using portland cement in quantity, to provide a means of storing cement at their plants during the winter season, to prevent depleted supplies when the rush of construction comes.

Clare Concrete Products, Great Bend, Kans., announces an expansion in the facilities of the company to produce concrete roofing tile. This firm has been in business since 1936, in the production of a full line of concrete products. The machine to be used in the new production will be the first installation of its kind in Kansas.

BETTER WEIGHT DISTRIBUTION MEANS

BIGGER PAYLOADS

Combination pedestal and water tank (exclusive).
Combination throttle and "over center" drum brake.
Short wheelbase truck mounting.
Low center of gravity.



5 to 6½ C.Y. WILLARDS

OTHER FEATURES

- Heavy duty construction yet lightweight.
- Ratchet controlled chute 7' 6" with two 4-foot extensions; hydraulic control available.
- Chain drive take-up by hinged reduction box.
- Repair parts are standard—available locally.

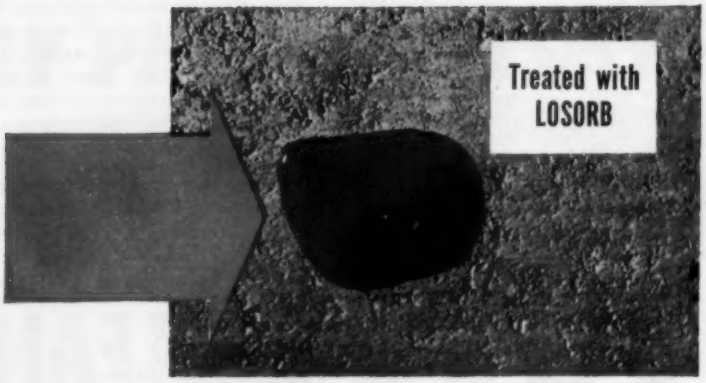
STUDY THESE FEATURES and you will see why the new Willards offer bigger legal payloads, faster operation and lower maintenance costs. Only Willard offers combination water tank and pedestal and single lever throttle and drum brake control. Every operator will appreciate the combined throttle and "over center" drum brake made possible with the "fluid drive" on Chrysler engine. Willard offers more for your money; get the facts today. Dealers everywhere.

Manufactured in Los Angeles and Galion, Ohio
WILLARD CONCRETE MACHINERY SALES CO.
11700 Wright Road, Lynwood (Los Angeles County), Calif.
Member T.M.M.B.

WILLARD TRUCK MIXERS

2% of LOSORB

means this



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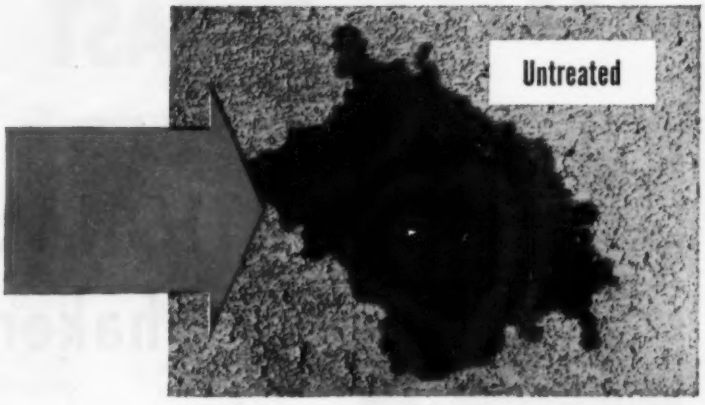


when added to

concrete mix

Moisture-proofing of concrete blocks and other products is "built-in" when LOSORB is added to the mix. The photographs above show how effectively Losorb prevents penetration of water. Both blocks are identical, except for the addition of a small percentage of Losorb in the treated block.

With walls of Losorb-treated cement block, the inside surfaces may be safely painted without plastering, and without danger of blistering and peeling due to passage of moisture through the blocks. Losorb eliminates the need of waterproofing above grade, reduces construction costs, minimizes crack-frequency, makes mix easier to work, prevents shrinkage of concrete blocks during curing, and provides many other practical, cost-saving advantages.

Write for complete details and instructions on how to use LOSORB. Use the coupon.

Pennsylvania Industrial Chemical Corp.
Clairton, Pennsylvania
Plants at:
Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.
Sales Offices
New York, Detroit, Chicago, Boston, Los Angeles
Philadelphia, Pittsburgh, Cincinnati

PENNSYLVANIA INDUSTRIAL CHEMICAL CORP. (CM)
Clairton, Penna.

Please send me information on LOSORB.

Name_____
Position_____
Company_____
Address_____

S. Pacific Milling Company Adds Batch Concrete Plant At San Luis Obispo, Calif.

Officials of Southern Pacific Milling Company, Santa Barbara, Calif., recently announced the completion of the firm's new San Luis Obispo concrete batch plant, bringing the total of installations to 14 in the three counties of San Luis Obispo, Santa Barbara, and Ventura.

This new plant, which increases Southern Pacific's output in the area from 35 to 125 cu. yd. of transit-mix per hour, was constructed by the California Batching Company of Los Angeles at a cost of approximately $50,000.

Phil Holmes, operations manager, stated that in addition to the new concrete producing facility Southern Pacific Milling Co. has completely renovated the adjoining buildings, and has five new 6½ cu. yd. transit-mix trucks operating out of the plant, serving the San Luis Obispo area. Repairs to the aggregate bunkers now allow for 1,000 tons of storage, plus the 200-ton capacity of the batch plant itself. Since it was decided to concentrate on the aggregates operation, the company has added nine plants in this area.

Huber Construction Company To Supply R.M.C. for Homes

A plant to manufacture ready-mixed concrete will be set up by the Huber Construction Company of Dayton, Ohio, at the site of a proposed 1,800-home residential development. The Huber facilities will provide a part of the ready-mix needed for the project.

Charles Huber, head of the firm, stated that a portable plant and six special trucks to haul the finished product have been purchased for $150,000. He plans to have them in operation by mid-May shortly after construction of the homes begin.

Marietta Concrete Officials Announce Staff Changes

Several appointments and changes have been announced by officials of the Marietta Concrete Corporation, Marietta, Ohio.

Jack Curtis, Wilmington, Ohio, has been appointed district sales manager of Marietta's Midwest territory. In his new position he will supervise all sales programs of Marietta farm silo dealers throughout most of Ohio, eastern Indiana, and northern Kentucky.

Robert J. Wiedmeier has been named manager of the company's branch in Charlotte, N. C. He replaces Vernon L. Gatewood, who has been the Charlotte plant manager for the last two years.

Mr. Gatewood has been made manager of Marietta's Jamestown, N. Y., plant.

Bruce R. Beard is the new general manager of production and sales at the Marietta's Precast Panel Division in Baltimore, Md. He will direct production activities of the company's precast concrete building panels in Baltimore and will also be in charge of panel sales for the eastern territory.

Hurst Concrete Products Company, Santa Barbara, Calif., reportedly the oldest manufacturer of concrete blocks in Southern California, has filed articles of incorporation, naming William H. Hurst, the son of the founder of the company, as the president of the corporation.

Greenwood Block and Tile Company recently opened a new block plant in Greenwood, Miss., according to announcement released by J. J. Richards, president. Associated with him are L. D. Phillips and W. R. Phillips, Jr., who have been in the block business in Columbus, Miss., for the last ten years.

The Precast Division of Concrete Supply Company, Louisville, Ky., has completed plans for its new plant on an 11-acre site for the manufacture of concrete specialties. The firm also produces ready-mix.

SHAKE CLEAN FAST

WITH THE

NATIONAL Car Shaker

Patented

- Soon pays for itself
- Keeps your men out of R R cars
- Simple one-man operation
- Quickly and easily installed in your plant

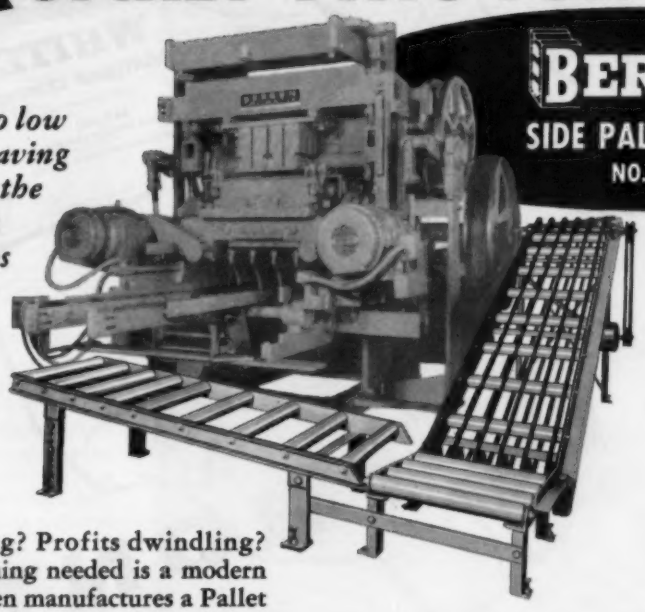
Write for a list of users in your area

National Conveyor & Supply Company

356 N. Harding Ave. Chicago 24, Illinois

LOW-COST MODERNIZATION for OLDER MACHINES that *QUICKLY* PAYS FOR ITSELF

Budget-priced so low that labor-cost saving can easily repay the investment in as little as 5 months



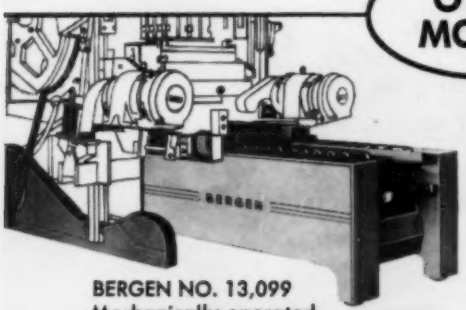
BERGEN
SIDE PALLET FEEDER
NO. 13,000

Production lagging? Profits dwindling? Perhaps the only thing needed is a modern Pallet Feeder. Bergen manufactures a Pallet Feeder to meet every need. Many block plant owners who prefer a side pallet feeder will find all the requirements of high efficiency and economy in the Bergen Side Pallet Feeder.

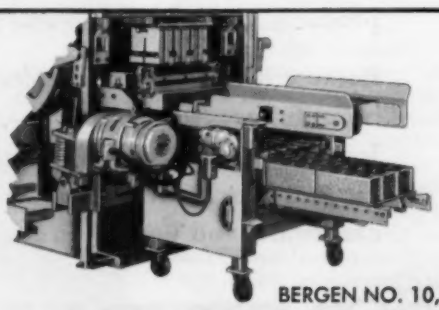
Here are some of the features!

- Low initial cost
- Simple, trouble-free operation
- Finest quality ball-bearing rollers used throughout
- Individual, long-life V-belt conveyor
- Adjustable legs offer a variety of height positions
- Easily installed . . . no major alterations necessary
- Quickly detached to facilitate block machine repairs or cleaning

OTHER MODELS



BERGEN NO. 13,099
Mechanically-operated
Underneath FRONT PALLET FEEDER



BERGEN NO. 10,000
Hydraulically-operated FRONT PALLET FEEDER

BERGEN
MACHINE & TOOL CO., INC.

Write or call Bergen "Collect" for complete details.

NUTLEY, N. J.

Phone: NUTLEY (N.J.) 2-7300

These Two Can Put Your Business OUT IN FRONT!

Keep your business "out in front" by making distinctively different concrete products. Concrete units a step ahead of competition in appearance result in more business, and justify a higher per-unit profit. Today, concrete products manufacturers are making larger profits by manufacturing more attractive concrete products with Medusa *White* Portland Cement.

Because it is pure white color, Medusa White makes more beautiful concrete products—products that sell on sight. Join the hundreds of products plants that are using Medusa White for more attractive white faced concrete block, ornamental trims, cast stone, and other faster selling items.

MEDUSA WHITE

MEDUSA PORTLAND CEMENT COMPANY • 1000 Midland Building • Cleveland 15, Ohio

WHITE • WATERPROOFED WHITE • GRAY • STONESET
WATERPROOFED GRAY • AIR ENTRAINING • BRIKSET
HIGH EARLY STRENGTH • WHITE TILE GROUT CEMENT

SALES OFFICES: Cleveland, Ohio • Chicago, Illinois
Toledo, Ohio • Pittsburgh, Pennsylvania • New York, N. Y.
Milwaukee, Wisconsin • York, Pennsylvania

OVER SIXTY YEARS OF CONCRETE PROGRESS

Ready-Mix Venture Prospers In Tiny California Desert Town

Another ON THE SPOT Report

CROSS ROADS (pop. 40) is just a dot on the map of California. It lies a few miles below Parker Dam on the Colorado River, the dam forming Havasu Lake and Parker Reservoir, which supplies most of the water needs of Los Angeles by way of the 250-mile Colorado River Aqueduct.

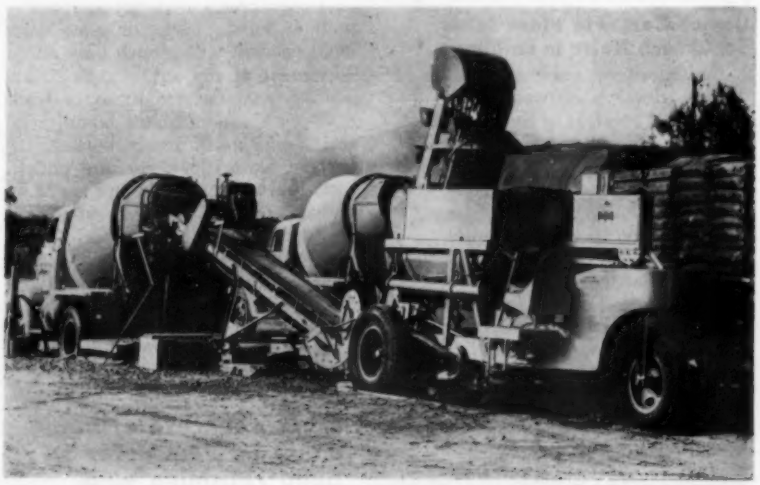
By HARRY F. UTLEY

The Cross Roads community's chief claim to fame, perhaps, is that it is one of the smallest in the nation to boast a ready-mixed-concrete plant!

A year or two ago the Daniel-Dixon Company decided to establish a modern trailer park at Cross Roads to accommodate the many sportsmen who come the year 'round to the Colorado River for its excellent fishing. Plans called for a large number of concrete slabs on which to park the trailers. Good sand and gravel gravel for making the concrete ocin the nearby river fluffs, but there were no mixing facilities available; so the concern purchased a Willard weight-batch loader and a single Willard truck-mixer to do the job.

Today Daniel-Dixon owns two Willard weigh-batch loaders (one fixed and one portable unit on pneumatic tires), two Willard mixer-loading conveyors, and four Willard 3-cu. yd. truck-mixers. It has batched and mixed nearly 10,000 cu. yd. of concrete. Yet the primary project, laying the trailer-court slabs, is still unfinished. As soon as the equipment to manufacture concrete had been set up, word got around that concrete, mixed and ready for the forms, could be had from Daniel-Dixon, and the firm has been busy ever since supplying it to a variety of customers.

The bulk of this business has, however, come from contractors on the aqueduct who have been engaged in increasing pumping-station capacity since late in 1954. Most of this work has been at the Eagle Mountain and Hayfield pumping stations west of Cross Roads, where the contracting firms of Wismer & Becket and Vinnell Company, Inc., have been enlarging the pumping plants and installing additional 10-ft. diameter steel pipelines. The concrete has been used principally for pouring bases, foundations, and footings for the huge pumps and motors, as well as for encasing the manifolds, elbows, and providing supports for the pipe sections.



The setup used by Daniel-Dixon on the Colorado River Aqueduct. At the stockpiles the aggregates are weighed in; then the weigh-batcher loader is spotted over the conveyor, which charges the two- 3-cu. yd. truck-mixers. Sacked cement is added from the platform alongside.

One of the Daniel-Dixon truck-mixers waiting to discharge at the Eagle Mountain pumping station. The second barrel of 10-ft. steel pipeline is shown under construction.

The portable weigh-batch loader, one conveyor, and two of the truck-mixers have moved about on the aqueduct projects constantly. But this has entailed no problem at all, since the various units are all mounted on pneumatic tires and can quickly travel from place to place. The other batcher and conveyor-loader, and two truck-mixers are more or less permanently located at the home base in Cross Roads to take care of orders for concrete from riverside dwellers, desert ranchers, and construction work in the nearby communities of Earp and Parker.

The Willard weigh-batch loader itself is an ingenious piece of portable equipment which loads aggre-

(*Continued on page* 210)

● This is a miniature reproduction in black and white of a full-color outdoor poster selling concrete masonry. The full-size of the poster is 12 ft. by 25 ft. The National Concrete Masonry Association, Chicago, Ill., is providing these posters at a cost of about $7 per poster, to include a one-line name and address in the space at the bottom of the poster.

Use of Concrete Block Ideal To Absorb Noise in Buildings

Reduction of noise in buildings, with a view to increasing the efficiency and comfort of the occupants, is today receiving increased attention from architects and builders. Tests have proved that concrete masonry units having open surface textures will absorb sound readily.

Sound waves upon striking a surface are partly reflected, absorbed, and transmitted in varying amounts, depending upon the character of the surface. A smooth, dense surface such as hard plaster or glass, tests have proved, will absorb only about 3 percent of the sound that strikes it. Exposed concrete masonry walls built with the ordinary commercial run of block will absorb between 18 percent, for a very dense and smooth sand and gravel block, and up to 68 percent for a very coarse-textured lightweight block.

A material that will absorb 15 percent or more is considered useful for sound proofing. Careful control of the aggregate gradation, the mix, the amount of water used in the mixture, and the degree of compaction at the time of molding all have a bearing on the surface texture of concrete block.

Paint applied to concrete masonry tends to close the surface pores and thus reduces its value for sound control. Spray painting has less effect in closing the pores of masonry than brush painting. However, relatively the same effects can be achieved with brush painting, provided that the brushes have stiff bristles, which tend to reduce filling of pores.

There has been an upsurge of interest among those planning institutional buildings, hotels, apartments, schools, and commercial buildings to provide facilities which are most suitable for those who accupy such buildings. Studies in learning aptitudes of school children have shown, for example, that under the proper conditions for learning, it is possible for the young students to absorb their instruction much more readily. That is one reason that concrete masonry walls are being increasingly used in modern school construction.

Vernon L. Gatewood, manager of the Charlotte, N. C., plant of The Marietta Concrete Corporation, Marietta, Ohio, for the last two years, has been named manager of the company's plant at Jamestown, N. Y. This operation, Marietta's newest, was established primarily to serve the Eastern states with precast concrete items and concrete farm and industrial silos.

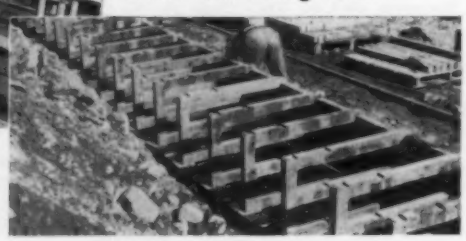
Ready-Mix Venture

(*From page* 209)

gates from stockpiles into a weighing hopper, the ingredients being accurately batched by means of integral beam scales with an over-and-under indicator. The batcher is then spotted over the mixer-loader conveyor, where cement and water are added and the truck-mixers are charged. Batchers are of 3-cu. yd. capacity to match the 3-cu. yd. mixers, although the Willard concern supplies a full line of truck-mixers up to 6½-cu. yd. capacity for conventional ready-mix plants. For flexibility, the Daniel-Dixon Co. used sacked cement, which is conveniently stored on a platform alongside the mixer-loading station.

Now that the aqueduct work is about completed, it is hoped that the company will finally get around to paving the trailer slabs for which the Willard equipment was initially acquired. That is, unless another and more urgent demand for concrete crops up, and it probably will!

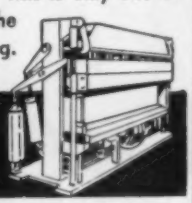
using concrete cribbing made on PreCaster to build retaining wall ➧



➧ *making cribbing on the PreCaster*

make special units

● Are *"specials"* a problem in your plant? Are you turning down business because your equipment is not flexible? Then you certainly ought to take a look at what the PreCaster can do for you. The pictures show concrete cribbing . . . the newest product to cut the cost of retaining walls. This is only one of many "specials" that the PreCaster makes easily. To get the full story, write today for the complete PreCaster catalog.



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Oshkosh 50-50 hub deep in soft sand at the "Country Club Estates" — a new subdivision adjacent to City of Coronado. Tough going for most rigs — easy for Oshkosh!

It's hard to believe — but the 4-wheel drive Oshkosh 50-50, with 18,000 lb. payload on each axle, pulls through soft sand quickly and easily . . . spots loads anywhere!

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Your Oshkosh rig really performed. Our others needed planking to do anything, even on relatively firm sand. The Oshkosh 50-50 needed no planking. While it sank down in the soft sand, it never stopped even once.

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Here's the truck specifically engineered and built for the ready-mix concrete industry — backed by over 39 years' experience in manufacturing 4-wheel drive trucks for on-and-off highway hauling. With 18,000 lbs. payload on each axle, the Oshkosh 50-50 lets you spot load where other concrete carriers can't go . . . to get jobs competition can't handle. Write for full information today!

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Rx Ready Mix

By Harry F. Thomson

Many Producers Could Improve Production Details

THE production of ready-mixed concrete is a manufacturing operation. This is not a bland aphorism; it is a statement of fact which should be recognized by small producers as well as large. Although the trucking element of a business is of major importance as representing the largest item of investment, the majority of employees, and the service feature offering customer appeal, the fact remains that the concrete product involves a conversion of raw materials. Such conversion is basically manufacturing. That the conversion may take place through the agency of either a truck-mixer or a central-mixer does not alter the fact of the manufacturing function.

True, the value added to the cost of raw materials by the conversion into concrete is low, probably less than 10 percent, whereas in general manufacturing the value added to cost of materials is commonly 50 percent or more; this is due to the simplicity of the proportioning and mixing in producing ready-mix. The cost of trucking in delivering ready-mix probably approaches 50 percent of the plant cost of materials used.

The full import of the manufacturing function in producing ready-mix was recognized by the early leaders of the industry. Nevertheless, during the hectic 1930's when the National Recovery Administration was drafting codes of performance for industries in this country, the most strenuous efforts of the officers of the National Ready Mixed Concrete Association, ably aided by Vincent Ahearn, were required to obtain a separate code for commercial production of ready-mix. This code prevented our infant industry from being grouped with the much more numerous and quite influential building material dealers group, some of whom considered ready-mix as a questionable interloper in the construction supply field. The separate code for ready-mix established recognition by the government of the manufacturing character of the business. Our representatives at the time earned the enduring gratitude of all producers right down to the present time as the N.R.A. action stimulated confidence in the possibilities of the ready-mix business, and the rapid expansion of the industry began shortly thereafter.

From that time forward the government has treated our industry as an entity. The Census Bureau has listed "Mixed Concrete" among the items of concrete products in its Census of Manufacturers. In fact, mixed concrete has become by far the largest in value of output among the concrete products, which include such items as block and precast pipe. Some producers have been slow to realize that they are members of a really big industry which embraces many relatively small operators. For some years the statistics have shown that between one-quarter and one-third of the country's annual cement production was used in commercial ready-mix. But it has remained for one of the largest manufacturers of cement to write Mr. Ahearn of the N.R.M.C.A. last November as follows—"We wrote that in 1954 over half of our shipments were to ready-mixed concrete producers, and during 1955 we expect to top last year's performance."

As a member of this important manufacturing industry, each ready-mix producer can be considered to have assumed an obligation to all other members of the industry, as well as to his own trade. That obligation is an implied promise to furnish the very best concrete he can, within the requirements of the specification applying to each delivery. Many a materials dealer has added ready-mix service to an already established business. This new obligation entails a very different perspective from that of his previous operation. As a dealer he merely re-handled products which others had manufactured, these persons were responsible for quality. As a ready-mix producer he became a manufacturer and therefore was responsible for quality, uniformity, and other details incident to furnishing concrete "ready-to-place".

There are numerous details in which a ready-mix operation may be deficient, even when backed by a conscientious intent to meet the obligation of a manufacturer. One which is glaring in many plants is the failure to include competent technical service in the organization. It is misleading to think of ready-mix merely as an alternate method of delivering cement and aggregates to a job. Too many managements are apparently complacent in following someone's table of mixing weights, including water, regardless of changes in gradings and moisture content of aggregates, influence of admixes such as air-entraining agents, and even instructions from specifications and customers. There is little excuse today for the absence of technical advice on mixes. The numerous "short courses" which are offered by national, regional, and state associations are intended to fill the gap in available competent personnel which existed until a few years ago.

A typical example of lack of complete information in a ready-mix concern occurred some time ago in connection with concrete for an industrial project. As an interior wall pour required handling the concrete from one end in a rather flat chute, the engineer had approved the contractor's using a mix containing an extra sack of cement per yard and a slump not exceeding 7 in. Early on the morning of the pour the engineer telephoned the plant furnishing the concrete; he was informed the contractor had ordered 8 to 9 in. slump. In order to judge what the job was receiving, the engineer asked for the total water in a batch. After considerable delay the clerk reported the amount of water added to a load. When asked what percentage of moisture was in the sand, the clerk stated he did not know and couldn't find out as the regular batcher man was in the yard and couldn't be contacted. He added that his assistant weighed batches according to a posted table. When requested to send a slump cone with the next load, the clerk advised that a salesman had the plant's only cone and he wasn't expected to report until evening. The upshot was that subsequent loads were dispatched with a slump of about 5 in. and the trucks were delayed at the job while water was added and mixed into the batch. Al-

together it was an unsatisfactory performance by a plant of moderate size.

Another instance of poor manufacturing occurred with a company which produces its own gravel. The superintendent noticed that a large shipment of 1-in. gravel contained a considerable amount of oversize, running to larger than 2 in. After telephoning around it was established that a screen at the gravel plant had split, and shipments had been made before the trouble was found, but no report had been made to the home office. When the ready-mix superintendent asked what to do with the poor gravel, as the plant had no current business for 2-in. size, he was instructed by the management to "stock it at one side and work it off gradually with the good gravel." The complaints received during the next ten days from customers laying sidewalks and other thin slabs can be imagined!

Deficiencies in furnishing "warm" concrete during freezing weather occur in many plants which use steam-jets for heating aggregates in bins and (or) draw mixing water from steam-heated water tanks. If the jets are steaming aggregates in the bins for a considerable period, possibly all night in severe weather, material at the bottom of the bins will be very hot when operations start in the morning. If this material is discharged to the mixer, and especially if hot water is also used in the batch, the temperature of the concrete may be too warm for normal placing and temperatures exceeding 100 deg. F. may easily result; in such batches a flash-set may occur. A remedy for using unduly hot aggregates is to draw off such hot material and return it to the stockpile.

The water in steam-heated storage tanks will usually be quite warm—even hot—the first thing in the morning. In many plants the mixing water passes directly from the tank to the batch, so that the temperature of the stored water may govern the temperature of the concrete. If the temperatures of aggregates and water are both high, the batch man commonly has no means of controlling the temperature of the batch, and too-hot loads may be shipped. There should be some provision of blending cold water with the hot to permit some degree of control, even though it may be difficult for the batch man to maintain uniformity.

Under the common arrangement in which the storage tank is a closed vessel, as warm mixing water is withdrawn, it is replaced in the tank with cold water from the pressure supply line. If the deliveries are rapid, the withdrawal of hot water may be much faster than the heat recharge in the tank, with the result that the temperature of the mixing water falls gradually until by mid-afternoon the temperature of the so-called "hot concrete" is considerably below what the customer is justified in expecting—say below the 60 deg. at the job which is frequently specified. The customers complain that they are receiving "cold concrete", but there is little the plant operator can do in view of the volume of business he is attempting to serve. This shortcoming in uniformity of production results from storage tanks of insufficient capacity and from a heating rate inadequate to maintain a uniform temperature for mixing water.

Numerous other examples could be cited to indicate details in which many producers could improve their manufacturing procedure, and thereby more nearly meet their obligations to their customers—not to mention the reputation of ready-mix for quality and uniformity.

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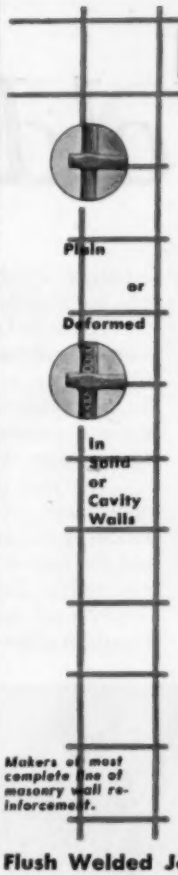
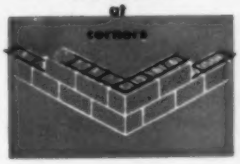


FLUSH-WELDED JOINTS—STRONGEST BY COMPARISON

Prefabricated PARTITION-LOK

Prefabricated CORNER-LOK



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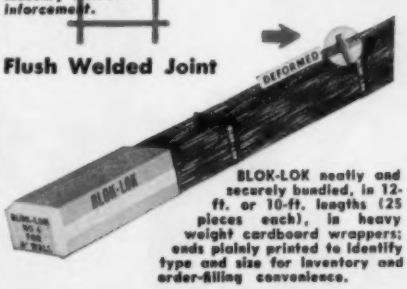
Flush Welded Joint



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NRMCA Holds 26th

Another ON THE SPOT Report

EQUITABLY dividing the time between business sessions and the biennial equipment show, the National Ready Mixed Concrete Association met in its 26th annual convention February 13 to 16, 1956, at the Conrad Hilton Hotel, Chicago, Ill. The four-day affair, held in conjunction with the 40th annual convention of the National Sand and Gravel Association, was intended to help responsible management in the two industries improve the quality of their product and to reduce the cost of operation and transportation. On the whole, the scheduled subjects afforded this opportunity. This year particularly, it was noticed that an appreciable number of sub-executives and technical and supervisory personnel attended the discussion sessions of this section of the two industries. Final attendance figures are not yet available, but attendance exceeded 6,700, setting a new record.

To the end of benefiting as many of the ready-mixed concrete and sand and gravel producers as possible, the program was arranged to include combined sessions of the two associations on subjects of mutual interest, and separate meetings at which matters peculiar to each industry were discussed.

The joint sessions covered short courses, legislative co-operation, labor relations, adequate highways, the tax outlook, group insurance, the federal wage-and-hour law and the industry's wage pattern, and the use of industrial radio. The separate sessions of the N.R.M.C.A. covered such topics as future cement availability, safety awards, a clinic on concrete quality, various phases of

Newly-elected officers of N.R.M.C.A. (left to right): Robert Mitchell, Los Angeles, Calif., president; J. W. Roberts, Richmond, Va., vice-president; M. Eugene Sundt, Albuquerque, N. M., vice-president; F. E. Schouweiler, Fort Wayne, Ind., treasurer.

Reviews Record Year in Serious Business Meeting—

Attendance and Exhibits Set New Highs

Annual Convention

testing concrete and cement, merchandising practices, and co-operative promotion of ready-mixed concrete for city paving.

Officers and Directors R. C. Collins, Warner Company, Philadelphia, Pa., chairman of the nominating committee, submitted the report of this committee on nominations for new officers and directors for 1956. The following were elected: Robert Mitchell (Consolidated Rock Products Co., Los Angeles, Calif.), president; John W. Roberts (Southern Materials Company, Inc., Richmond, Va.), and M. Eugene Sundt (Albuquerque Gravel Products Company, Albuquerque, N. M.), vice-president; and F. E. Schouweiler (Old Fort Supply Company, Fort Wayne, Ind.), treasurer. Named to serve on the executive committee with the officers were Ralph Anderson, Columbus, Ohio; Henry J. Brown, Oshkosh, Wis.; John B. Donovan, Springfield, Mass.; and Murray S. Simpson, Washington, D. C.

Elected to the board of directors for a three-year term were Harold M. Lacy, Dallas, Tex.; C. W. Ireland, Birmingham, Ala.; W. S. Walters Jr., Memphis, Tenn.; William E. Wilson, Great Falls, Mont.; E. K. Brown, Duluth, Minn.; W. J. Hicklin Jr., Jacksonville, Fla.; George C. Eady, Louisville, Ky.; and Walter W. Muirhead, Portland, Oreg. It was also announced that Kenneth E. Tobin Jr. was promoted to associate executive secretary and Delmar L. Bloem to associate director of engineering.

The speakers' table at the joint N.S.G.A.-N.R.M.C.A. luncheon, showing the new and retiring presidents of both organizations and the guest speaker, Douglas McKay, Secretary of the Interior.

Safety Awards Presentation of PIT AND QUARRY safety trophies to the winners of the N.R.C.M.A.-sponsored annual safety contest was made by Louis C. Schilling, president. Winners for 1955 were as follows: Class A (more than 100,000 cu. yd.)—Fischer Lime and Cement Company, Memphis, Tenn.; Class B (50,000 to 100,000 cu. yd.)—Stewart and Nuss, Inc., Fresno, Calif.; Class C (25,000 to 50,000 cu. yd.)—Lake Cities Corporation, East Chicago, Ind.; Class D (less than 25,000 cu. yd.)—Central Builders Supply Co., Sunbury, Pa.

The inclusion for the first time of a Class D award for small producers in the 1955 contest indicates that the subject of safety in plants is receiving more interest on the part of all companies, regardless of size. Well over half of all the ready-mixed concrete producing companies in this country fall in this category, so the initiation of the award was of special interest. It was also decided to add a fifth category for producers of over 250,000 cu. yd. annually, beginning with the 1956 contest. Accepting the trophies for their respective companies were: W. S. Walters (Class A); Fred S. Stewart (Class B); Herschel Moon (Class C); and I. C. Longacre (Class D).

Coming Conventions Plans for coming conventions and meetings were announced. The 1957 joint N.S.G.A.-N.R.M.C.A. convention will be at the Statler Hotel, Los Angeles, Calif., February 11-14. The 1958 joint convention will be at the Conrad Hilton Hotel, Chicago, Ill., February 9-13, with exhibits at the Coliseum. The 1959 convention will be at the Roosevelt Hotel, New Orleans, La., February 15-19.

The 1956 summer meetings of the boards of directors of the two associations will be at the Del Monte Lodge, Pebble Beach, Calif., October 1-3. The 1957 board meetings will be at the Manoir Richelieu, Murray Bay, Que., August 25-31. The 1958 meetings will be at the Lake Placid Club, Lake Placid, N. Y., September 27-30.

In 1955 for the first time the two associations held a joint Committee Week, separate from the annual conventions. This was so successful that it will be repeated in 1956, at the Jefferson Hotel, St. Louis, Mo., August 13-16.

Joint Luncheon At Wednesday's joint luncheon Douglas McKay, secretary of the interior, gave an inspiring address in which he displayed an excellent knowledge of both industries. He took note of the fact that in 1955 the sand and gravel industry had taken first place in tonnage production among all minerals, displacing coal. He also cited estimates of the Bureau of Mines that portland cement production capacity will be increased by 15 percent in 1956 and will be 26 percent greater by December, 1958. From these figures, he said, it is apparent that a substantial growth period is in view, if the aggregates requirements of the construction industry increase in conformance with the availability of cement.

Presentation of safety awards for Classes A, B, C, and D in that order: Class A—W. S. Walters accepting the award for the Fischer Lime & Cement Co.; Class B—F. S. Stewart, representing Stewart & Nuss, Inc.; Class C—Herschel Moon, Lake Cities Corp. representative; and Class D—I. C. Longacre receiving the award for the Central Builders Supply Co. President Schilling made the awards.

Truck Mixer Bureau At the directors' meeting on Monday Andrew C. Thomas (Jaeger Machine Co.), chairman of the Truck Mixer Manufacturers' Bureau, told of the work done since the last convention. He stressed particularly the bulletin from the joint committee of truck manufacturers and the Bureau, which contains much information of importance to everyone interested in truck mixers and the trucks on which they are mounted. He also gave each member a very ingenious and useful truck mixer weight visualizer which can be adjusted to approximate the weight distribution of most types of truck mixers and trucks. It was stated that the Bureau would send one of these visualizers to every producer of ready-mixed concrete, including non-members.

President's Address Louis C. Schilling (I. E. Schilling Company, Miami, Fla.), retiring president of N.R.M.C.A., struck a note of high optimism in his address to the members. He paid tribute to the two heads of the association's staff, Vincent P. Ahearn, executive secretary, and Stanton Walker, director of engineering, for the accomplishment of many purposes over the long years they have served. He expressed pride in the fine quality of the work of these men in developing other staff personnel to carry on efficiently.

Mr. Schilling felt that the many regional and state meetings held in '55 were very educational and on the agenda were items of great interest to all, particularly those having to do with labor and customer relations, supplies, equipment, and the quality of the product. The membership in the association has grown steadily, he said, and as a consequence, the demand for space in the equipment

(*Continued on page* 220)

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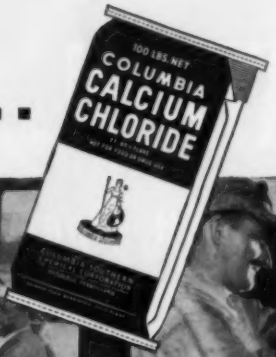
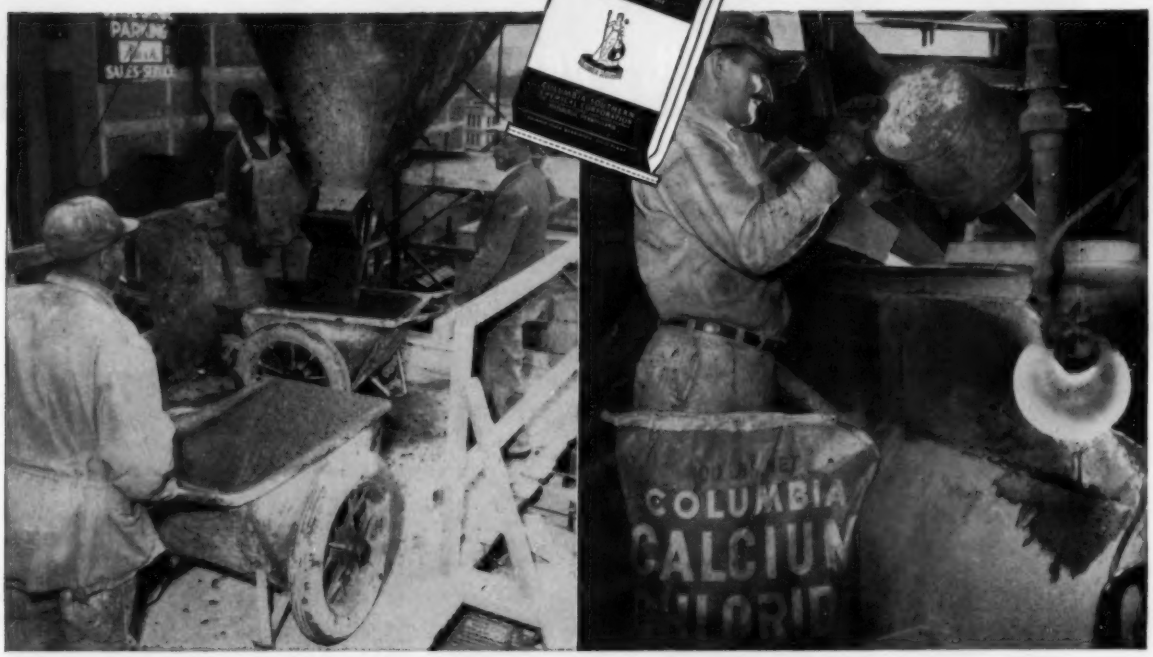
all year 'round with . . .



CHEMICAL PROGRESS WEEK-APRIL 23-28

A BETTER AMERICA THROUGH CHEMICAL PROGRESS



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Ready mix producers can render a genuine service to customers by recommending the use of Columbia Calcium Chloride—especially at temperatures below 70°F. when the set and strength of plain concrete are greatly retarded.

You can add Columbia Calcium Chloride to the mix either at your plant or on the job.

- **Makes initial and final set three times faster**
- **Increases early and ultimate strength**
- **Releases forms faster for re-use**
- **Cuts down on overtime**
- **Helps meet work schedules**
- **Increases workability**

IN CONCRETE PRODUCTS

Whether your concrete products are blocks, pipe, or precast units, the use of Columbia Calcium Chloride will improve production and lower manufacturing costs. Here are some of the advantages you gain by adding Columbia Calcium Chloride to your mix:

- **Reduces time required for initial set**
- **Gives higher early strength**
- **Reduces curing time**
- **Reduces cracking**
- **Allows for quicker handling**
- **Reduces breakage**
- **Permits earlier shipping**

The advantages of Columbia Calcium Chloride are apparent all year 'round. That's why it pays to use Columbia Calcium Chloride regularly throughout all seasons.

Columbia Calcium Chloride works equally well with normal, air entrained and early high strength cements—and is easily controlled in either flake or liquid form.

WRITE TODAY FOR COMPLETE INFORMATION . . . PLEASE SPECIFY WHETHER YOUR INTEREST IS IN READY MIX OR CONCRETE PRODUCTS

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"RCA 2-WAY RADIO IS OPERATION...INCREASES

...Says AL FISH, *Operations Manager, Material*

One of the plant dispatchers using his RCA 2-Way Radio. Other pictures show some of the great fleet of radio-equipped mixer trucks.

RCA... world leader in Radio offers you equipment specially designed to meet Ready-Mix requirements.

Only RCA designs, manufactures, installs, maintains and services its own mobile radio equipment. Speaker, tubes and microphone are all made by RCA . . . as part of a complete system package.

Equipment can be supplied for either standard or narrow-band operation. Mobile units can be used with either 6- or 12-volt batteries. This means the equipment will not become obsolete easily—and it means your investment is protected.

Look for these marks of quality: Superior crystals, tubes and microphones for clearer talking, longer life . . . color-coded tuning for simplest maintenance . . . expert service by RCA Service Company to assure peak performance.

INDISPENSABLE TO OUR EFFICIENCY 10-15%"

Service Corporation

E. B. "Al" Fish, Operations Manager, Ready-Mix Division, Material Service Corporation, Chicago.

After a scientific study to determine how 2-way radio communication would improve ready-mix operating procedures, Material Service Corporation, Chicago, has installed RCA 2-Way Radio in 200 vehicles and 11 yards. Adds Mr. Fish, "RCA 2-Way Radio gives us control of all equipment, at all times, and under all conditions—and that covers a lot of ground in the ready-mix business! Today radio is indispensable to our operation . . . increases efficiency 10-15%. We are convinced it pays."

Take a look at these profit-making advantages:

- Radio control makes possible a tighter delivery schedule, using fewest number of trucks per job.
- In-yard operations are speeded up—driver makes only one stop.
- Overtime is reduced—plant closes without waiting for last truck to return.
- Mixer trucks can be diverted from one job to another when delays occur.
- Service vehicles can be directed to next job instead of returning to garage for new assignments.
- Concrete engineer, dispatcher, salesmen, or supervisors can be "everywhere at once." This saves mileage and relieves driver of responsibilities.
- When breakdowns occur, servicing of vehicles is speeded. Mixer truck is back in action faster, and costly "jack-hammer" job may have been averted.
- Time and expense of driver phone calls are eliminated. Directions come direct from dispatcher.
- Radio is a plus feature in selling ready-mixed concrete service to new customers.
- Radio helps contractors meet schedules. Their overtime and idletime costs are reduced. They are highly enthusiastic about the service.

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N.R.M.C.A. Convention

(*From page* 216)

exhibit has become greater each year.

He described the committee meeting held as a permanent part of the annual agenda of the convention.

This expanded program will afford members ample opportunity to attend the committee meetings while at the convention. He felt that more amicable labor relations will result in the future if the common interests of labor and management were enunciated, sponsored, and followed by both groups. In his opinion the real reason why the association continues to prosper is because of its qualified interested leadership, which is scattered all over the country. This stems from the fact that companies in this industry are primarily local in nature.

Regional Associations The annual meeting of the state and area association officials was the initial public business meeting of the association. The first speaker, R. E. Hutchins, secretary, Mid-West Ready Mixed Concrete Association, Chicago, Ill., described short courses in ready-mixed concrete which have been held under the auspices of various state and area associations. Mr. Hutchins reviewed the start of his group, which he had helped to form in 1949, with the late C. "Dolly" Gray of Indianapolis, Ind., contributing the impetus of action to the integration.

The association has grown to its present stature on the basis of a program designed to help the employees of its member companies (located in four states) in self-training for manufacturing a quality concrete. Courses were initiated at Rose Polytechnic Institute at Terre Haute, Ind., as the need for more specific training became apparent.

Mr. Hutchins described the various short courses held in later years, mainly in the period between Christmas and New Year, the best time for employees to take the necessary time for attendance. The employees, however, disliked using this period for instruction. The final change in the "school" was to hold the 8th meeting at the time of the N.R.M.C.A. 1956 annual meeting.

Paul R. Smith, executive secretary of the Empire State Sand, Gravel and Ready Mix Association, Buffalo, N. Y., reported that this association had been functioning for the last 4½ years. Its primary work has seemed to be to help legislators in the formation of legislation benefiting the state and local economy. This naturally affords a wonderful opportunity for the industries he represents to assist the legislator in appraising the merits of various measures of interest to these industries and fortify him against the uninformed.

Vincent P. Ahearn, executive-secretary (left) and Charles B. Baker, president, Universal-Atlas Cement Company, New York, N. Y., who told of the cement situation in 1956.

Mr. Smith cited several bills which had been introduced in the last few years, as examples of how undesirable legislation can be reframed before it causes trouble for producers. He feels confident that the joint endeavors will develop a favorable atmosphere and relationship among producers of materials, legislators, and local communities. Criticism, divorced from honest and constructive purposes, does not serve the objective of securing desirable legislation. Industries thus co-operating minimize the lobby or pressure group stigma which is so often associated with the activities of industry associations.

Claude L. Clark, secretary, Ohio Sand and Gravel Association and Ohio Ready Mixed Concrete Association, presented a paper on *Services to Our Members*. He feels that one of the real reasons for local or regional associations lies in the opportunities they afford competitors to sit down and have a personal discussion of business conditions and operating problems. Across-the-table discussions can bring into harmony many seemingly divergent opinions.

Mr. Clark believes that producers go to conventions to learn about what is going on in the industry, regionally and nationally; to discover what the prospects are for the future; to learn how others have solved production, or merchandising, or transportation, and other problems; and to be informed on what the national association is doing to benefit the industry in the way of promotion, research, competitive practices, and the many other industry-wide programs. The producer's attendance at a national convention and his visits to the exhibits are his apprenticeship in tomorrow's operation.

Legislative effort continues to be the major activity of service to the members of his association, Mr. Clark said. He described several of these services and other types which have been rendered members since the formation of the two associations over 21 years ago.

E. R. Booker, executive secretary, Rock, Sand and Gravel Producers Association of Northern California and Northern California Ready Mixed Concrete and Materials Association, spoke on the subject of collective bargaining on an area association basis. Mr. Booker said that labor unions are constantly striving to equalize rates and conditions within larger and larger areas, and that because of the type of operation the ready-mixed concrete industry has more trouble in such negotiations than have the sand and gravel interests.

He described his function in serving on the committees which carry on deals with the unions in northern California, emphasizing that labor costs comprise the most important element of costs which producers face, and that spokesmen must be given a free hand to arrive at a settlement as equitable as possible. It is highly essential, he said, that the overall relationships between employers and the unions be such that both parties really do "bury the hatchet" between negotiations, and attempt to live with the agreements in peace and harmony and without undue bickering over technicalities.

H. J. Stockhard Jr., executive secretary, Carolinas Ready Mixed Concrete Association, told the meeting of activities of state and area associations producing insurance savings for members. The industry, he said, has not had a separate classification established by the National Council on Compensation Insurance. Action was initiated last year which might lead to the establishing of such classification in North Carolina; and it is hoped that if the move is successful, it might be put into effect throughout the country, to reduce rates radically.

Part-time management services is the second way a saving might be effected by associations. Although any savings realized by such an arrangement will not be enjoyed by individual members, unless dues can be lowered because of the result, it can effect a substantial saving to the association.

Ahearn's Report In his annual report to the associations, Vincent P. Ahearn, executive secretary, presented a comprehensive coverage of timely issues and subject matter ranging from construction record and outlook to public relations. He pointed out that even the optimistic view held with respect to the volume of new construction expected during the last year was proven to be conservative to the extent of several billion dollars. Further, new construction volume expected in the coming months, based on predictions of the U. S. Departments of Commerce and Labor, would reach a new record level for the tenth successive year.

By considering the percentage relationship which sand and gravel production bears to construction volume, the report states that an estimated 375,000,000 tons, valued at $405,000,000, was produced in 1955. The fourth annual study of the ready-mixed concrete industry conducted by association officers in 1955 indicated that the 1,218 companies reporting used 103,397,272 tons of fine and coarse aggregate, and 82,346,330 barrels of cement.

The latter statistics point up the question of cement supply which has so strongly engaged the attention of N.R.M.C.A. throughout 1955. A survey conducted early last year disclosed that in most parts of the country a shortage of cement for ready-mixed concrete purposes was expected. This situation, unfortunately, was more widespread than anticipated. Although supply was adequate in some areas, in many there was a critical shortage of this material. Several companies, particularly along the Eastern seaboard, were forced to use off-shore cement since domestic producers were unable to meet ready-mixed concrete requirements.

A survey of cement company executives, however, indicated that individual companies have taken steps to increase their capacities through expansion of existing plants and construction of new ones. This would indicate that while 1956 will still be on the short end of cement supply, by 1957 the critical shortage will have been substantially reduced.

Mr. Ahearn's report also dwelled at length on the matters of the pending highway program; tax developments concerning percentage depletion, transportation tax, and depreciation practices; freight rates; labor relations, including application of the wage-and-hour law to the sand and gravel industry, and group insurance; safety programs; industrial radio; waterways toll; public relations; etc.

W. C. Hansen, director of research, Universal Atlas Cement Company, Buffington, Ind., one of the speakers.

In concluding, Mr. Ahearn stated that the two industries have a remarkable production record during times of both war and peace. Maintenance of that record, he feels, is contingent to a large degree on the increasing consciousness of management in the matter of controlling costs, and a sensible approach to pricing of products.

Walker's Report In his annual report to the membership on the engineering divisions of both associations, Stanton Walker offered in our opinion one of the most factual, accurate, and inclusive reports we have seen. Outlining the scope of activities of his work, Mr. Walker summarized this as follows: (1) conduct laboratory research in the facilities sponsored jointly by the two associations at the University of Maryland; (2) publish many papers and reports covering laboratory work and other information of interest to the industries, in the form of technical information letters, informal mimeographed reports, and printed publications; (3) conduct an engineering consulting service for members; (4) represent the industries in the work of many different technical organizations of interest to members, such as A.S.T.M., A.C.I., H.R.B., and A.R.E.A.; and offer similar representation before specification writing bodies, such as state highway departments and departments of the Federal Government; (5) conduct the annual short course of instruction at the University of Maryland; (6) do anything else that a member wants done in the way of miscellaneous chores.

Harry Irwin, Warner Company, Philadelphia, Pa., who described the methods of cooling concrete.

Mr. Walker described the associations' laboratory work as the backbone of the technical committee activities, in outlining the research program, its present status, and its projected scope. Much time has been spent of late on studies of the flexural strength of concrete, which has been made the basis for the acceptance of concrete in many cases.

Work of the 38 technical committees of the associations on which Mr. Walker serves obligates much of his time. The selection of a Committee Week in 1955 permitted an efficient co-ordination of the many duties previously spread over odd times throughout the year. Short courses, he feels, are now a permanent part of the program, ten major meetings of this nature having been held in 1955. He made a summary of these courses and outlined objectives for future ones.

Industrial Radio Ernest W. Jennes, Washington, D. C., counsel for the associations, presented a paper describing the eligibility standards for the use of industrial radio. He stated that the association is constantly conferring with the Federal Communications Commission to explore future changes in the laws governing the use of radio which would permit a greatly expanded use by manufacturers. He emphasized that such use must be of a manufacturing nature rather than of a distributing type, and added that the N.R.M.C.A. had filed pleadings to the effect that

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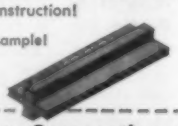

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ready-mixed concrete is in fact a production in this determination.

Geographically, industrial radio can be used only in metropolitan areas of less than 500,000 population. There are at present only 34 such areas in this country, in which areas 40 percent of the population resides. There are over 60 industries now using radio, and the conflict in interference on the assigned band frequencies will soon make necessary arbitrary allocations to eliminate the discriminatory features of the law.

One acceptable solution to the difficulties of using industrial radio is the relatively new Citizens Radio Service Band of 460 to 470 megacycles. This has been used in large volume in Chicago, New York, Los Angeles, and a few other large cities, but has not generally been utilized elsewhere. The equipment is costlier and the effective use range is only about 20 miles, compared with the 40-to-50-mile range in the lower bands. Also, the equipment is harder to maintain in the upper bands, and is spotty in reception, particularly in mountainous country.

The final solution to these problems, according to Mr. Jennes, involves these factors: further technological development, in making available "split-channel" procedure with narrower bands; more efficient equipment; more efficient use of present bands; and an increasing interest displayed by the F.C.C. in business use of radio.

Panel On Radio Following Mr. Jennes's talk, a four-man panel of producers who use various types of radio equipment answered a number of questions from the floor. This panel was composed of the following: M. Eugene Sundt, Albuquerque, N. M.; William J. Hicklin Jr., Jacksonville, Fla.; Joseph Sadler, Richmond, Va.; and Russell P. Mumford, Springfield, Ohio.

Mr. Sundt's installation consists of one base station and 54 mobile units, which are leased at a cost of about $8,000 annually. The company pays $6.25 per unit per month, plus parts maintenance, or a total of about $7.50 per month. They have a 400-ft. transmitter and 50-watt, 50-megacycle equipment which gave them an average range of 25 miles; when this was moved to a better location this range was doubled.

Mr. Hicklin owns his radio units, which cost $475 per truck installed. In justifying his costs, he feels that a rule of $5 per month per unit for maintenance, plus parts cost, might be satisfactory. He amortizes his radio equipment in three years, which he feels is too short a time, as the equipment lasts far longer than that. His truck charge is $6 per hour, or 10 cents per minute; and a saving of only 10 minutes daily would pay for this cost.

Mr. Sadler owns his entire equipment, consisting of a base station and a 100-ft. antenna costing $15,000, and a number of mobile units. In addition, he uses radio in the company's sand and gravel operations on the James River, a navigable stream. There are also marine radio installations in the company's large tugs and barges which carry materials from the pits to the ready-mix plants, etc., three channels being utilized—ship to shore, ship to ship, and an emergency band.

Mr. Mumford leases his equipment, as this method is considered best in that no capital investment is required. A minimum of $435 per month and a base rate of $1,100 less credits is charged, plus $150 for the tower antenna. Mobile truck units are rented at $15 per month, with an installation charge of $50 per unit. In the slack winter season a portion of the mobile radios are removed from the trucks and replaced in the Spring.

Mr. Jennes explained that there are three methods of obtaining radio equipment: (1) it may be leased from American Telephone and Telegraph Company on a rental basis; (2) a license to operate may be obtained and the equipment may be purchased outright or on other terms; (3) a combination common carrier operation may be used. After March 10, 1956, the A. T. & T. Co. will cease further new leasing of such equipment.

Glenn Cook, American Builders Supply Company, Louisville, Ky., briefly described his company's radio installation, using the Citizens Band of 450 megacycles. The firm purchased all equipment, the base station costing $2,500 and each mobile unit $750. He stated that definite channels are not assigned in Louisville, but that there is a tolerance permitted of .05 megacycles, which accommodates 80 stations per band. He has a 160-ft. high antenna and obtains a 20-mile range with the base station power of 20 watts and mobile unit power of 15 watts.

CEMENT SUPPLY AND HIGHWAYS

Cement Supply Two speakers were on the program to discuss the important factor of cement availability for the ready-

Rex Hartup, Food Machinery & Chemical Corp., Lakeland, Fla.; R. C. Prater and J. B. Betts, Jeffries & Betts Gravel Co., Ft. Worth, Texas; and E. D. Neelley, Ready Mix Concrete Inc., Waco, Tex.

mixed concrete industry in coming years. One of these, Charles B. Baker, president of Universal Atlas Cement Company, New York, N. Y., said that 1956 would be a difficult year for all, since a good portion of the announced increases in capacities of cement mills would not be effective until late in 1956. Mr. Baker showed a series of slides which accurately portrayed the supply and demand for portland cement over the last decade and especially that portion used by the ready-mixed concrete industry.

So far as his own company is concerned, Mr. Baker pointed out, the industry took 50 percent of the cement produced in 1955, while the overall average of all cement producers show this ready-mix demand in the same year to have been 33 percent. This percentage is steadily increasing, and he estimates that the proportion used for ready-mixed concrete in 1960 will be 40 percent, and in 1965, 50 percent of all cement made.

Cement clinker capacity of all mills was increased in 1954 to 294,000,000 bbl., an increase of 36 percent above that of 1944. Estimates for 1955 are: 300,000,000 bbl.; 320,000,00 bbl. for 1956; 350,000,000 bbl. for 1957; and 370,000,000 bbl. for 1958. Increases announced for the entire cement industry now total 78,100,000 bbl., and each day brings forth news of additional capacity increases above that figure.

Mr. Baker stated that it is difficult to evaluate figures for 1958, as it is problematical if the demand will continue in the ratio of the last two or three years. He feels that it is safe to tie in production of cement to construction, which in turn may be estimated to follow a percentage of population growth in the future. He feels that in order to provide the cement which is required in the future, mutual objectives must be agreed upon and many questions must be answered concerning raw material reserves, types of aggregates, quality of concrete required, better trucks and mixers, etc.

Another factor in probable demand cited by Mr. Baker will be the extent of the national highway program, and the degree of participation which the ready-mixed concrete industry might take in such a program. He feels that the industry can demonstrate its flexibility in such construction, and can afford much aid to the cement industry by so doing.

Herbert G. Jahncke (Jahncke Service, Inc., New Orleans, La.), a past-president of the N.R.M.C.A., followed Mr. Baker in a discussion of cement prospects for the future, from the standpoint of the ready-mixed concrete producer. Cement, said Mr. Jahncke, is undoubtedly the most important ingredient in concrete, yet important as it is to the ready-mix man, there is little that he handles over which he has less control. His volume of production is controlled to a large degree by the amount of cement which is available to him. With this premise, Mr. Jahncke enumerated an impressive list of factors from which the condition results.

Among the major items cited were the following: the volume of construction over the last ten years exceeded any estimates made in 1945; this volume accounted for nearly 11

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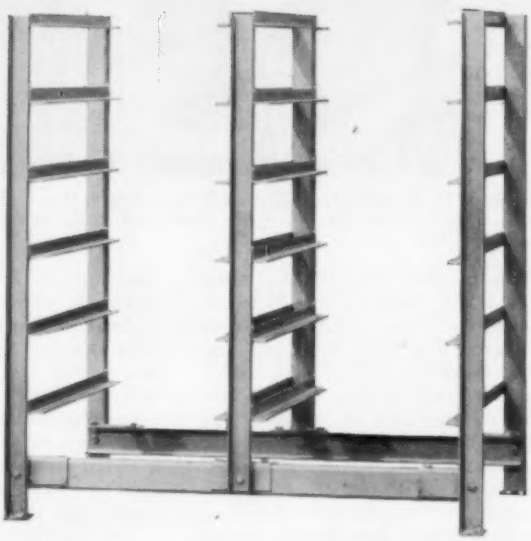

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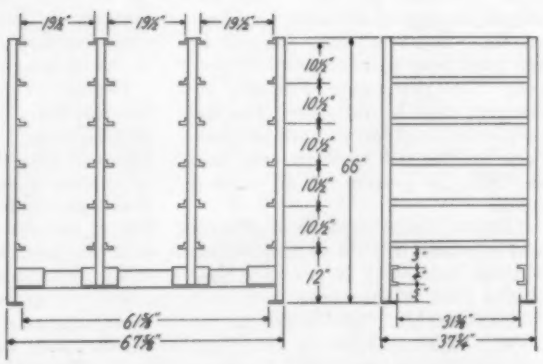

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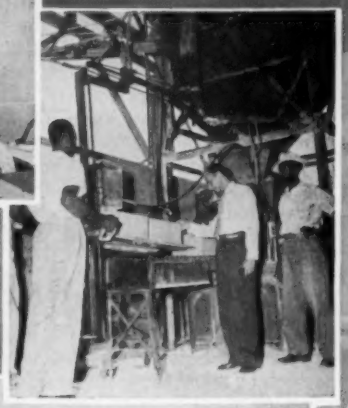

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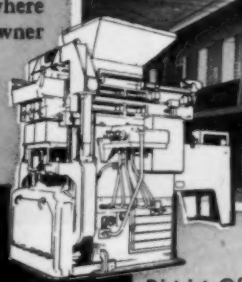

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percent of the gross national product; over-expansion in the twenties and abnormally low construction activity in the thirties made the cement producer reluctant to expand again; costs of cement-making capacity have increased to about $10 per bbl. today. Despite these factors, the cement industry has increased its production over 200 percent in the past decade. All realistic estimates of cement demand in the future predict a continuance of or increase in the present requirements, especially as to that amount needed for an expanded highway program. With these facts as a background, Mr. Jahncke believes that it is time that the cement suppliers take a new look at their sales policies.

He based a number of his contentions on the returns from a questionnaire he sent to some 60 leading ready-mixed concrete producers in which he asked for accurate information on the effects of cement shortages, price commitments, allotments, fluctuations in demand, reserve storage at plant or mill, foreign or "out-of-area" cement use, and future estimate factors. He believes that the present notice of only two weeks protection as to coming cement prices given many ready-mix people by their cement suppliers is totally inadequate when commitments for concrete extend over many months. He declared that such contracts should be made over a year's period, and that the price change (if an increase) should occur in a slack season. He said that each industry should realize its dependence on the other, to the end that both will have profitable operations in the future.

Adequate Highways Ezra C. Knowlton (Utah Sand and Gravel Products Corp., Salt Lake City, Utah), who along with the executive secretary had last year been instructed by the association board of directors to work with congressional and other associations toward resolving problems in the new highway legislation, presented a highly informative resume of the current situation, following up the one given a year ago.

Concluding on an optimistic note, Mr. Knowlton reported that there is evidence of sincere, strenuous effort being made by those national associations and groups upon which Congress has historically relied for help in highway matters toward resolving differences. Favorable developments were stated to include the Administration's agreement with a pay-as-you-go financing plan, the elimination from the new Fallon bill of financing considerations (which it is understood will be handled by the House Ways and Means Committee), and a provision for financial credit to those states which have completed toll or free roads that form a part of the interstate system and which have been completed to a satisfactory standard.

Special emphasis was placed on the statement that there is no room for overconfidence; and failure (to pass a highway program bill) could be repeated if public interest and support are not accorded Congress in a greater degree than was evident during the last session.

TAXES, INSURANCE, WAGES AND LABOR AGREEMENTS

Tax Outlook As in previous association meetings, John T. Sapienza, association tax counsel, delivered a talk on the tax outlook for 1956 which concerned the application of certain sections of the Internal Revenue Code to the two industries. In the absence of federal legislation at this time, it was still the opinion of Mr. Sapienza that both corporation and individual tax rates would continue at their present levels, with the 52 percent corporation rate extended. He pointed out that two identical and bipartisan bills have been introduced which would effect that extension until April 1, 1957. Government officials have stated that a reduction of this rate by only 5 percent would result in a $2,000,000,000 annual revenue loss.

With the exception of the above probable action on corporation levy, the tax situation is uncertain. Considering that 1956 is a political year, it was stated that there may be some small chance of a reduction in individual taxes.

With respect to depreciation, it was reported that due to the general dissatisfaction with the proposed regulations issued in 1954 these were voided. A second set was issued last November 11, and they are now under consideration. Changes made in the latter include applying the taxpayer's experience in determining a useful life for depreciation of equipment, as opposed to using an industry-wide figure, and the restriction of total depreciation claimed over the life of the equipment to an amount which represents the difference between cost and salvage. In other words, salvage must be taken into account.

The proposed regulations will also allow a new election of depreciation method, if so desired, within 90 days of the issuance of the final regulations. Mr. Sapienza pointed this out because of his impression that under the new proposed regulations the declining balance method may be more advantageous and should be elected because salvage may be disregarded until the final period, and a change to the straight line method can be made at a later date without first obtaining written consent from the Commissioner of Internal Revenue.

Group Insurance In reporting to a joint session of the association on why *The Associations' Group Insurance Plan is a Good Investment for My Company*, William Moore (J. P. O'Connell

Messrs. Oelschlager, Corrigan, Skiles of McCann Ready Mix Concrete Co., Ransom, Ill., with Mr. DeVilling and Mr. Vollmer of the Blaw-Knox Co., Pittsburgh, Pa.

Co., Boston, Mass.), emphasized that an extremely important point in favor of the associations' plan is the fact that the supervisory Board of Trustees for the insurance fund are recruited from the ranks of the member companies—men who are known to the entire membership—and annual audit reports are made on the status of the fund, details of its operation, and the factual results. For these reasons participating members are not faced with the unfortunate consequences that have been recorded in the irresponsible administration of other trusts.

Mr. Moore pointed out that even the present plan, considered to be the best with respect to the needs of the industry at the lowest cost, could be improved in its scope of coverage and would operate at a still lower figure in direct proportion to the degree that those not now participating join up. It was stated that after three years of operation, more than 3,000 people have come under the plan, with $185,000 paid out in claims—half of this amount during the last year. This furnishes evidence of an encouraging growth.

Federal Wage Law Charles A. Horsky, Covington and Burling, Washington, D. C., counsel for both associations, dealt with various aspects of several topics under the Fair Labor Standards Act, such as exemptions, record keeping, "basic rates", etc., which present recurrent problems to all industry. As to coverage of employees under the Wage-Hour Act, he said that this applies to interstate movement of materials only, and that the employees of companies doing only a "local business" would be exempt from such coverage. He cited several cases in point of this interpretation, and of implications arising therefrom.

He emphasized that employees in our industries are covered by the act when the materials are used locally for the repair, maintenance, or reconstruction of any instrumentality of commerce. He reviewed the exemptions applying to the so-called "white-collar" workers — executive, administrative, and professional employees; the first of these classes, to be exempt, must be paid not less than $55 per week. The two latter classes would be exempt from coverage if they were paid not less than $75 per week. There may be some revisions of this salary limitation some time later. The act went into effect on March 1, 1956.

In the computation of hours worked any "preliminary" or "postliminary" time must be included in pay time if the work in those periods was "an integral part of the principal activity of the employee." Mr. Horsky covered the significant points of record keeping, basic rates, and other federal labor standards statutes which may have some relationship, such as the Davis-Bacon, the Copeland, the Miller, and the Walsh-Healy Acts. He warned the producers not to put themselves in a position where additional claims are asserted against them by their employees, saying that this could be prevented by having a thorough knowledge of the applicable acts.

Wage Pattern A summary of the wage pattern and other developments in the labor relations picture in 1955 was made by Kenneth E. Tobin Jr., associate executive secretary. He reported that the scope of the questionnaires from which the quarterly wage surveys and semi-annual employee benefits surveys are compiled has been enlarged. It was stated that the unusual uniformity in wages and other employee relations throughout the two industries was apparently due to the predominance of Teamster union contracts.

While other unions that have established collective bargaining relationships in these industries include the Operating Engineers, the Machinists, and the Common Laborers, the most widespread are the Teamsters. The latter, showing little regard for jurisdictional lines, have frequently organized the production employees as well as the drivers.

It was shown that there was a distinct pattern of fantastic demands on the part of the union locals throughout the country and as a consequence, unlike 1954, there were Teamsters' strikes in Los Angeles (discussed elsewhere in this article), Fort Wayne, and Reno. Eighteen other strikes lasting a month or less were also reported.

Sixty-one of the operators replying on the associations' questionnaire indicated the granting of an increase in the straight-time hourly rate in 1955. The average was 11 cents per hour, as compared with the average increase of 12 cents per hour for all industry.

With respect to the so-called fringe benefits, Mr. Tobin said that as reported by the U. S. Bureau of Labor Statistics, the cost of fringe benefits averages nearly 25 percent of payroll and is increasing. There is a growing trend toward liberalization of vacation plans—the most familiar type of fringe benefit. An intensified union campaign for a guaranteed work week was made last year, and it was stated that many producers, who successfully resisted this demand then, expect the unions to make an even more determined effort to obtain this provision in the 1956 contracts. As a corollary to the guaranteed work week, several companies have reported demands made by the unions last year for a guaranteed annual wage.

Mr. Tobin indicated that group insurance or health and welfare plans have become widespread throughout these two industries in recent years. One feature of this growth concerns the success of many industry members in prevailing upon the unions to accept the group insurance plan of these two associations in lieu of contributing to a union health and welfare fund.

In addition to the foregoing phases of labor development, the speaker mentioned two other dangerous proposals made by the Teamsters—the "hot cargo" clause, which would in effect result in forcing an industry member who signed a contract containing this provision to assist the union in its boycott of other employers, and the Teamsters demand for advance acceptance of a multistate or state area agreement.

In concluding, Mr. Tobin stated that it is evident from the results of labor negotiations in these two industries in 1955 that the unions will continue their aggressive drive for higher wages and further employment benefits without regard to economic realities or capacity to pay. He added that the problems of labor relationships, whether or not the employees of a particular company are represented by a union, demand the personal attention, throughout the year, of the principal executives of the industry.

Los Angeles Strike The background and consequences of the recent 90-day strike experienced by producers in the Los Angeles area was effectively described for a joint session group by Vernon E. Lohr (California Materials Co.). He pointed out that the strike was a David and Goliath situation where a small local group of companies pitted their strength against the power and practically inexhaustible resources of an international labor union.

Of the 29 companies who banded together as a bargaining group, 14 are sand and rock producers, and 15

are ready-mixed concrete operators. Combined, they represented 90 percent of the productive capacity of these materials in the Los Angeles area.

Despite what Mr. Lohr termed as the Teamsters' strategy of clouding the real issue with a number of excessive wage-and-hour demands, the actual point of controversy which resulted in the walk-out was the union's demand for a pension plan over which it — the union — would have control. The Teamsters had already been successful in having such a demand met by the brewery industry.

A study of this pension plan by the aggregate and ready-mixed concrete producers proved that the *bulk* of the money in that pension fund was *not* necessarily for pensions. With the ironic twist that the companies against whom the strike was called were insisting as a matter of principle that the pension fund for their union labor be confined to such use, the Teamster officials, who apparently had a lesser regard for this protection of the union members' pension fund, ordered a walkout. It must be said that the industry members involved were of the opinion that the union officials with whom bargaining was attempted apparently operated completely on the instructions of a higher echelon.

Mr. Lohr reported that the industry strike strategy incorporated two efforts—legal and public relations. A suit was filed in federal court for damages and an injunction, charging unfair labor practices specifically in violation of sections 302 and 303 of the Taft-Hartley law. This proved somewhat less than effective, in view of the fact that the presiding jurist handed down an opinion *after* the strike had ended.

In the public relations effort, it was stated that difficulty was encountered with the local press in obtaining publicity which would also state the industry's position. Advertisements—as news releases—were then taken in order to get factual information to the striking employees, customers, and the general public. The latter showed an unsurprising apathy—until the pinch was felt. This pinch took many forms—a full halt of construction on freeways, schools, and (most importantly for public welfare at that time) flood control projects; 100,000 construction workers idled; and an estimated payroll loss of $150,000,000. All in all, over 250,000 people suffered economic or property losses.

After the industry had made several offers, including a 3-year contract and a revised pension plan, it was stated that bargaining efforts including those of federal conciliators proved ineffectual. Finally the N.L.R.B., on December 23, issued a formal complaint which threw out the pension issue and the Teamsters went back to work January 9 on the industry's pre-strike offer of an hourly 15-cent wage increase and a 2½-cent pension increase. The pension plan is presently being arbitrated.

For the enlightenment of those who have not had the opportunity to engage in "bargaining" with unions of this type, Mr. Lohr presented these points which were learned in this strike:

1. The Teamsters had not counted on the solidarity maintained by the 29 companies, but had apparently expected to "divide and conquer" as in other cases.
2. The strike was not popular with many of the 1,600 Teamsters involved.
3. Many Teamsters reported that they had no opportunity to vote on the strike call, and were completely unsuccessful in prevailing upon union officials to call a meeting (subsequent to the beginning of the strike) where the actual reaction of members could be manifested.

Labor Negotiations A panel discussion of labor negotiations in key areas in 1955 was conducted at a joint session by Norman J. Fredericks (Koenig Coal & Supply Co., Detroit), James A. Nicholson (Nicholson Concrete Co., Toledo), and Raymond F. Powell (Concrete Inc., St. Louis).

Mr. Fredericks reported that a group of producers in Detroit has formed the Transit Mix Concrete Institute. The bylaws of this group provide for a committee of five members, plus an attorney, who will operate as a bargaining group in labor negotiations for the operator members of the Institute. It was stated that this committee had proved its worth in December, 1954, at which time it obtained in bargaining sessions a 6-year contract with the union, and successfully countered labor demands for high wage and welfare increases plus a guaranteed working period (a 40-hour week in winter and 48-hour week in summer) with more realistic amounts.

Mr. Nicholson pointed out certain features of labor negotiations in Toledo that paralleled some in the Los Angeles strike. He stated that when a particular union local was successful in getting Toledo lumber dealers signed up on a contract, the local thought the building materials industry would automatically follow suit. When this proved untrue, the union ordered a walk-out, despite the efforts of the building material producers toward negotiations. Mr. Nicholson's further comments illustrated the point that, here again, union labor was not in full sympathy with a strike, but union officials would not call a meeting of union members.

As a departure from the parallel with the Los Angeles strike, it was reported that some industry men—not, however, on the association's bargaining committee — displayed a willingness to knuckle under to union demands. Mr. Nicholson emphasized his conviction that management must resist patterned, area-wide contracts and act as a group. Further, he urged that industry should come to the bargaining table prepared with demands of its own.

Mr. Powell's comments on a 13-day strike last year in St. Louis also pointed out what can happen when a union initiates a campaign for patterned contracts. In this case, St. Louis building contractors acquiesced in union demands for certain benefits, while the building material associates of Mr. Powell did not agree with those same demands when confronted with them by the union and, as a consequence, had a strike called against them. A suggestion that labor negotiations on behalf of the industries represented by these two associations should be handled by a professional person was accompanied by a statement that the members should no longer be surprised at spectacular union demands.

In the short discussion period that followed Vincent P. Ahearn stated that a professional negotiator should not be hired outside of the associations but should be developed within the ranks. He cited as an example the bargaining committee of the Los Angeles producers. It was added that familiarity with the industry's situation and problems is mandatory on the part of an industry negotiating representative.

CONCRETE DESIGN AND SPECIFICATIONS

Concrete Clinic D. L. Bloem, assistant director of engineering, N.R.M.C.A., was in charge of the clinic on calculating the proportions for concrete and describing methods of testing and sampling concrete, which was presented by Mr. Bloem and Messrs. James F. Shook, associate research engineer, and Richard D. Gaynor, assistant research engineer of the as-

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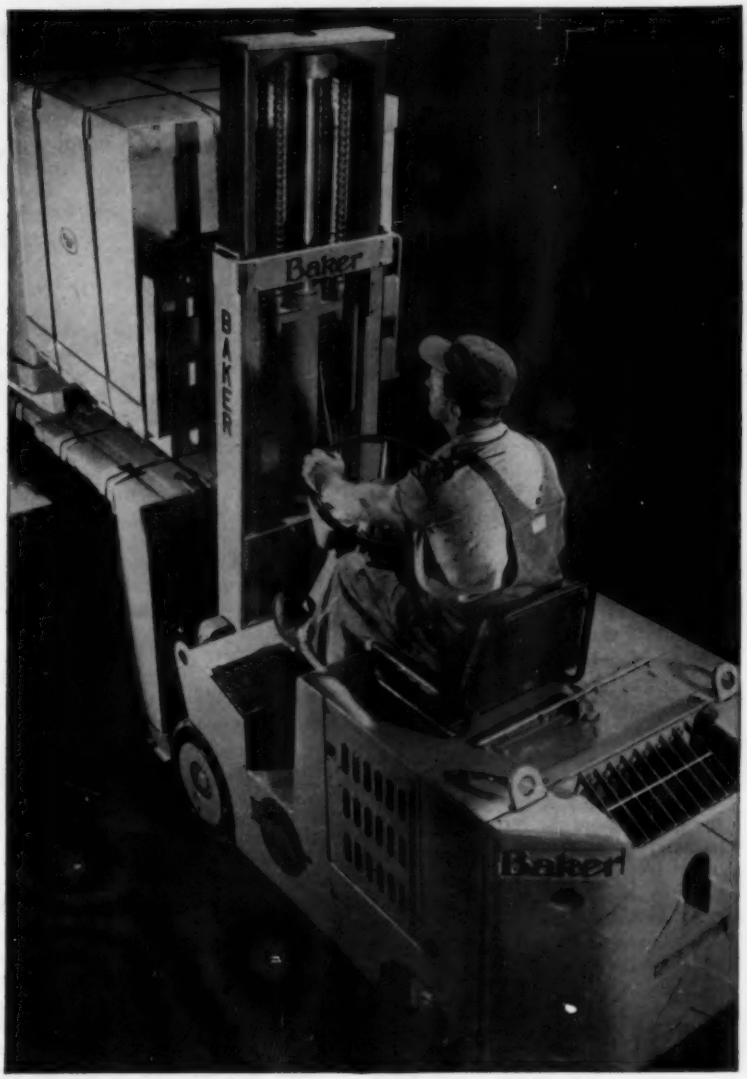

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sociation. Mr. Bloem prefaced his remarks by stating that it is highly important to the producer of ready-mixed concrete that he have knowledge of how to make good concrete, in order that he will not be victimized in case of improper testing or sampling procedures on the part of the customer. He emphasized that it is the duty of the producer to deliver the concrete as specified, but that he should not be held accountable for what happens to that concrete after it is so delivered.

By means of descriptive slides, methods of calculating proportions for concrete were reviewed, as presented in Publication No. 1 of the Joint Research Laboratory, University of Maryland. In like manner the scope of tests and discussion of the data as given in A.S.T.M. Bulletin No. 206 were reviewed to show proper procedures in testing ready-mixed concrete. These data have been reprinted in full in Publication No. 55 of the N.R.M.C.A.

Other conditions which affect the strength of concrete, such as curing (Publication No. 53), were discussed, the salient points of interest to the producer being shown. It was pointed out that all tests which measure the acceptability of fresh concrete at the point where the responsibility for its handling passes from the producer to the user are of special significance. Further, all tests of any kind of concrete as a material become of particular importance because of the nature of the contractual relations involved.

Flexural Strength Delmar Bloem also presented a highly informative paper, co-authored with Stanton Walker, titled *Effect of Aggregates and Other Factors on the Flexural Strength of Concrete.* The investigations covered by the paper are still in progress, and the paper presented a brief review of the work accomplished to date. Variations in testing procedures influence flexural strength specimens in a manner different from compressive strength specimens.

Since 1928, when research facilities were first established, investigations have been undertaken by N.R.M.C.A. dealing with flexural strength. The present tests were begun in October, 1954, and since that date the major portion of the time of the Joint Research Laboratory has been devoted to the study of evaluating results of compressive strength tests with those on flexural strength.

By means of slides, Mr. Bloem showed the bases for certain general conclusions which were reached. Stated briefly, these are:

1. Increasing the cement factor of the concrete into the range of very rich mixes in many cases failed to increase strength significantly.
2. Air entrainment caused increasingly large reductions in strength as richness of mix was increased. Penalties to compressive strength were greater than to flexural strength.
3. For standard curing, compressive strength was generally improved with age, at least up to one year. The improvement was greatest for rich mixtures where strength increased approximately in proportion to the logarithm of age.
4. No advantage in strength was shown for maximum sizes greater than ¾ in. and, in the case of compressive strength, the 2½ in. aggregate showed a sharp decline.
5. Concrete strength, in both compression and flexure, was considerably affected by the use of different brands of cement.
6. Coarse aggregate also had a considerable effect on concrete strength. There was no evidence that compressive strength was significantly less affected by aggregate characteristics than was flexural strength.
7. Measured flexural strength was reduced and reproducibility of tests was improved as the cross-section of specimens was increased.

Following Mr. Bloem's presentation, Stanton Walker answered several questions which were asked regarding certain conflicting results shown in the data. He said that the mixes were designed strictly in accord with highway specifications, and accordingly tended to be overly harsh. He referred to certain field data developed by the Illinois State Highway Department at the University of Illinois, where results varied from those obtained at the University of Maryland, by having higher flexural strength.

Requests were made as to how best to correlate the tests of flexural strength with those of compressive strength, so that the ease of making and economy of the former can be utilized. Mr. Walker stated that the association is now working on a practical means of developing a workable relationship between the two methods of testing, but that nothing definite has yet been announced. This is difficult, since so many factors influence the relationship.

Role of Gypsum W. C. Hansen, director of research, Universal Atlas Cement Company, Buffington, Ind., presented a highly technical paper on the role of gypsum (calcium chloride) in the manufacture of portland cement. Since 1889, when rotary kilns were first used by the producers of cement, gypsum has been used as a retarder to prevent flash set of portland cement. Mr. Hansen showed a series of slides illustrating the four principal compounds in portland cement and their reactions throughout the process of manufacture of the end product. Gypsum also acts as an accelerator in increasing the rate at which cement pastes develop strength, and as a modifier of the volume change characteristics of cement products during drying and setting.

Mr. Hansen stated that the percent of gypsum used has a great effect on portland cement. Some cements do not need the addition of gypsum to prevent flash setting. The rate of crystallization of gypsum varies widely, and it is necesesary to determine this characteristic closely, as it is the only retarder found in sufficient quantity to make it useful in the production of portland cement.

Cement Testing A progress report on the cement testing program of N.R.M.C.A. was presented by Stanton Walker, director of engineering. This program was initiated in October, 1955, following allegations from a member company that excessive variations had occurred in strength of carefully controlled concretes made with different lots of cement from the same company.

The committee appointed to study the problem include R. C. Collins (Warner Company, Philadelphia, Pa.); J. A. Nicholson (Nicholson Concrete Company, Toledo, Ohio); E. J. Nunan (Buffalo Slag Company, Buffalo, N. Y.); F. E. Schouweiler (Old Fort Supply Company, Fort Wayne, Ind.); Eugene Sundt (Albuquerque Sand and Gravel Company, Albuquerque, N. M.); and Mr. Walker. Later two other members were added: Fred F. Bartel (Tews Lime and Cement Company, Milwaukee, Wis.) and Herbert Jahncke (Jahncke Service, Inc., New Orleans, La.).

Two meetings of this committee have been held, and it was agreed that N.R.M.C.A. should undertake the development of data to determine the uniformity of cement, to be used as a basis for discussion with A.S.T.M. Committee C-1 on Cement, looking toward the establishment of suitable limitations on uniformity. It was decided that the

(Continued on page 235)

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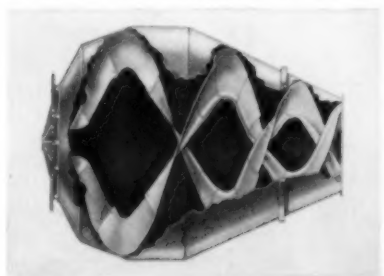

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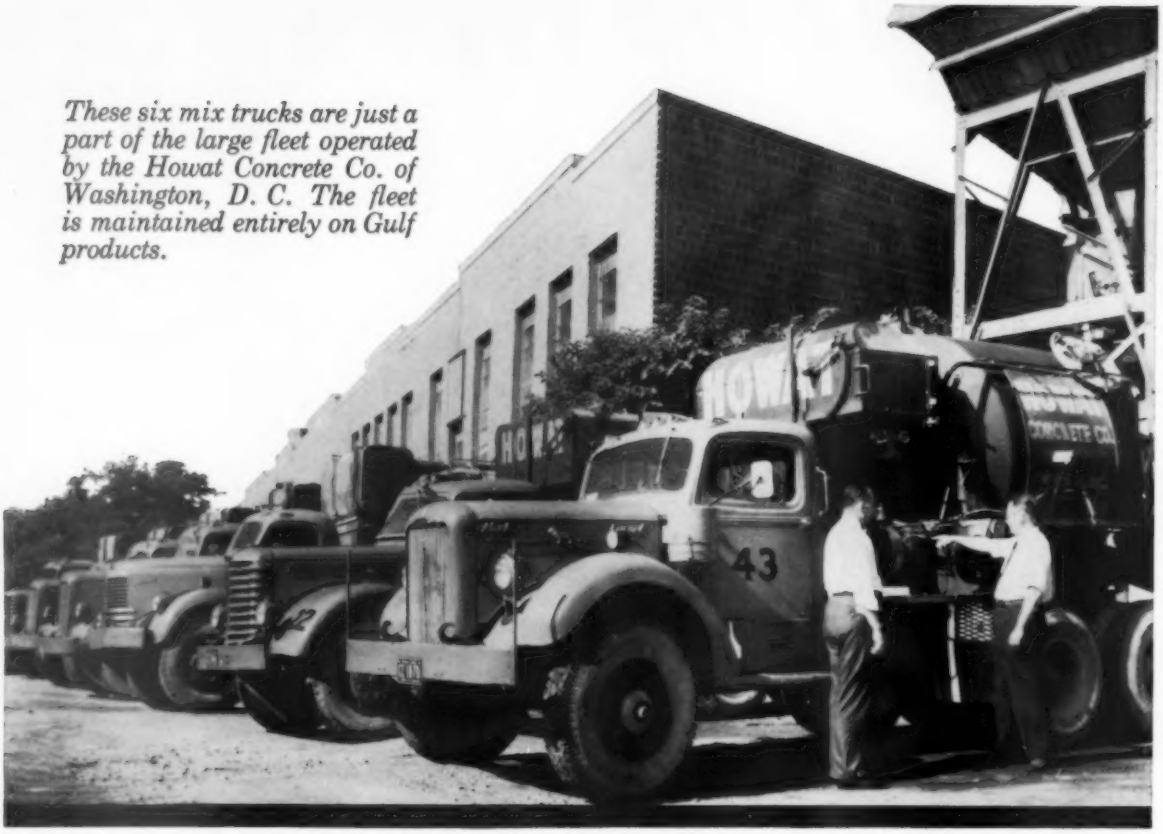

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(*From page* 230)

number of samples of cement should be small, and that the scope of tests should be limited to what could be done with meticulous thoroughness.

Over the period of a year the program will have included the testing of 156 samples of cement, 45 2-in. cubes having been made for each sample—a total of over 7,000 cubes. Mr. Walker showed slides giving a summary of strengths of mortars made, variations from a single source, strength differences from different sources, age-strength relationships, etc. He said that complete results would be reported at the next annual meeting of the association.

Cooling Concrete Harry Irwin (Warner Company, Philadelphia, Pa.), presented an interesting paper covering an unusual instance of having to cool ready-mixed concrete against the effects of high temperatures experienced there last summer. The job in this instance was supplying 850 cu. yd. of concrete for the 20-ft.-diameter foundation of a 500-ft.-high chimney, to be built in Philadelphia. Under the conditions of the weather at the time, the aggregate piles had absorbed a great amount of heat, and it was found impossible to keep the temperature of the concrete below the specified point of 160 deg. F. at the time of delivery without resorting to mechanical cooling. There was a 35-minute haul to the job site.

All the concrete was an air-entraining type for a 3000-p.s.i. strength. The aggregate piles were kept wet to reduce the temperatures at that point. Crushed ice was introduced in 50-lb. sacks into the plant mixer for a certain proportion of the water content of the mix, in the proportion of 100 lb. of ice per cu. yd. of concrete, or approximately 650 lb. per batch. This procedure reduced the production of the concrete about 20 percent in the 35-minute haul from the plant to the job site.

It was found necessary to drum-mix at the job until all the ice was melted, and to increase the stated amount of ice during the middle of the day to maintain control and to hold the temperature of the concrete 20 deg. F. below the ambient temperatures. A check run showed that without ice this was reduced only 5 deg. F. below the ambient temperature.

Three extra men were needed for this icing, none of whom had ever had experience of this nature. Over 36½ tons of ice was consumed, and the cost of the icing was not definitely determined. A charge of $1 extra per cu. yd. was made, and this charge was assumed by the contractor. In answer to questions following his talk, Mr. Irwin said he believed he would not again follow the procedure and thought that cooling could be accomplished more efficiently by means of refrigerating the water through coils.

Strength Specifications Stanton Walker, director of engineering, N.R.M.C.A., in his paper regarding the use of strength specifications for ready-mixed concrete, went into considerable detail as to what the producer should realize about such specifications, to avoid possible trouble. He stated that he should first know what average strength will be secured from the cement used; what percentage of tests may be expected to fall below the average strength obtained; what tolerances of low strength are allowed in the specifications; how much over-design will be needed to meet the tolerance requirement. He should also know that the operator can depend on tests being made in accordance with standard procedures.

If the customer is an experienced user of ready-mixed concrete, such knowledge, if properly applied by the producer, makes it fairly sure that trouble will be avoided. A competitor without such knowledge—or one less scrupulous—will probably underbid the job and get into trouble. Mr. Walker said that a large share of the variations in strength tests are due to other influences, rather than to variations of the concrete itself.

Included in such influences are the temperature and weather conditions when the concrete is sampled; the size of the sample; what happens to the sample in the first 24 hours; subsequent handling, curing, capping, and testing in the laboratory. Information on these requisite details of testing are available to all producers, and this knowledge is a "must" in any case. Mr. Walker outlined the variations in strength which may be expected, according to the ability of and knowledge possessed by the ready-mixed concrete producer making the tests.

He made reference to several papers on the subject which could help the operator know some of the elements of a good strength specification which could be reasonably met. These, he said, include the following: the condition that strength is assumed to be the basis for design; that a definite average strength be stated which can be attained in the field; and that a statement as to the permissible tolerances from the average be understood by both parties.

Mr. Walker stated that he felt there is a better alternate to a strength specification for specifying the quality of concrete, in adherence to A.S.T.M. Specification C-94. He feels it is the responsibility of the purchaser to fix the cement factor, water-cement ratio, slump, and other characteristics which will produce the concrete he desires. In this procedure, he feels that the ready-mixed concrete man can and should advise and furnish all available information to the purchaser, but should not assume the basic responsibility.

MERCHANDISING PRACTICES AND PROMOTIONS

After the Job Is Sold Edward J. Nunan (Buffalo Slag Company, Buffalo, N. Y.), chairman of the ready-mixed concrete committee of the New York State association, spoke on the important subject of the need of a definite understanding between seller and purchaser after the job is sold. Mr. Nunan prefaced his talk by listing a dozen things which should be included in a contract of sale, saying that all these are included in the N.R.M.C.A. booklet *Standard Clauses for Sales Agreements*", and he urged that all producers know and use these safeguards in every sale of his product. Misunderstandings can be avoided, he said, by a clear statement of the obligations of each party.

He cited two other booklets of the association which should be used by every ready-mixed concrete producer. These are *Control of Quality Ready Mixed Concrete* and *Specifications and Test Methods for Ready Mixed Concrete.* If the practices outlined in these publications were followed on every job, the architect or engineer would get in his structure concrete of the strength, durability, and quality which he designed. Mr. Nunan urged that the occasional producer who produces concrete below standard quality — perhaps to undersell a competitor, to compete with a job mix, or through just plain carelessness—should be rooted out of the industry, because the result is always a "black eye" for all ready-mixed concrete.

He related instances in his experience where non-adherence to proper testing procedures — as outlined in A.S.T.M. C-94 — prejudiced quality concrete after it had been accepted

(*Continued on page* 250)

Canadian Concrete Products Men Hold Seventh Annual Convention

Lou Scholes, newly-elected president of the National Concrete Products Association (Canada), being congratulated by W. H. Kirkpatrick (right), retiring president.

M. J. Patrick, Mayor of Windsor, Ont., welcomes the visitors.

George Y. Masson, vice-president, Ontario Association of Architects, one of the speakers.

Another ON THE SPOT Report

THE seventh annual convention of the National Concrete Products Association took place on February 20-21, 1956, at the Prince Edward Hotel, Windsor, Ontario. Attended by upwards of 100 persons connected with the concrete masonry industry of Canada,

By ROY L. PECK

along with many others from across the border, the two-day meeting utilized every minute available in the presentation of papers on a full variety of interesting subjects.

These ranged from architectural requirements to outdoor advertising, and from water proofing to building loans. Each topic was presented by a speaker who possessed a particular knowledge of his subject and its application to the needs of the members. Several addresses were given by speakers from the United States, including W. P. Markert and Herbert J. Vincent, both of the National Concrete Masonry Association, and C. A. Sirrine, of the Concrete Products Association of Michigan.

Lou Scholes, Gormley Block Company, Ltd., Gormley, Ont., was elected president of the association for the coming year. Other officers elected are C. S. Hadley, Hadley Moulthrop Engineering Company, Chatham, Ont., first vice-president, and Peter McPherson, Storrar Dunbrick Company, Ltd., Weston, Ont., secretary-treasurer. Three new directors, elected for a term of five years, included Richard Grimm, Victor Murray, and F. Green. Provincial directors were nominated from the floor, as follows: R. E. Johnson (Maritime), G. LaFlamm (Quebec), Herbert Lowen (Manitoba-Saskatchewan), V. D. Jaffries (Alberta), and J. Kennedy (British Columbia).

Manufacturers of concrete products machinery, equipment, and supplies, both in Canada and this country, contributed essentially to the successful meeting and to the recreational phases indulged in by most of the gathering on each of the three evenings of the meeting. While there was no exhibit of equipment scheduled, opportunity was afforded by several manufacturers for members to obtain information they desired about particular equipment. Taking advantage of the two luncheons, the cocktails and dinner dance on Monday, and the visit to Canada's largest night club on Tuesday evening, most of the visitors and their ladies enjoyed to the full the hours outside the regular business sessions.

At the opening meeting reports were given on the work of the various committees of the association and of the president, W. H. Kirkpatrick, and executive secretary, Robert Davidson. Mr. Kirkpatrick stated that the meeting marked the growth of the association, which in its seven years of activity had been patterned along the lines of endeavor of the state-side N.C.M.A. Mr. Davidson first presented his report in French—particularly addressing those present from Quebec and the Maritime Provinces. This was followed by an interesting recital in English of the last year's activities of the group.

Mr. Davidson stated that the association represents all sections of the industry, including concrete block, brick, pipe, prestressed members, and concrete specialties. He related plans for several future efforts to extend the field of services to members, pointing out that the association had gained 32 members over the last year. From 83 members in 1954 the organization has expanded to its present membership of 115, representing 87 percent of the concrete block production in Canada. Other details of activity related by Mr. Davidson included the statement that the work had been accomplished on a budget of only $10,000 and that much credit for this should be given to the 21 directors. The latters held 17 meetings throughout the year, traveling to various points at their own expense. He described the group insurance plans for members, stating that 20 companies having 411 employees now carry this protection.

According to Mr. Davidson, a revised dues schedule is necessary to finance the projected program this year. He urged that a greater proportion of the total 514 concrete producers in Canada become members of the N.C.P.A., in order to extend the benefits of co-operative action. One thing now prevalent in the industry, he said, is price cutting in certain areas. While control of

this situation is not within the scope of the association, he pointed out that this practice can only result in serious disorder.

George Y. Masson, of Shepard and Masson, Windsor, and vice-president, Ontario Association of Architects, in a talk outlining the needs of architects who specify concrete products, said he felt that N.C.P.A. had done an excellent job. He reported that he felt most of the firms he had dealt with were more interested in having their products used intelligently than in just selling these products. Specifically, he enumerated several ways the members can help the architect, including making dependable units, standardizing shapes and sizes, better visualizing the products, and mailing information in a form the architect can easily file.

Mr. Masson revealed that his greatest worry in using concrete block is to provide for shrinkage which occurs, especially in long walls. He suggested several ways to overcome the damaging effect of moisture shrinkage, perhaps by some kind of "take-up" unit, a copper expansion joint, or a secondary break built in the wall at weak points. He feels that the use of wall reinforcing is an essential requirement, and that its use should be extended. In his opinion the prestressed multi-unit floor and roof slab offers an increased volume which should be investigated by every producer. He warned that the progress of prestressing is rapid, and that factual information on the subject changes practically overnight.

Alex D. Wylie, chairman of the membership committee, and one of the founders of N.C.P.A., who is now serving in an advisory capacity, related details of some of the 450 calls he had made in covering 12,000 miles of travel in 1955. He feels that the average producer is getting along fairly well at present, mainly through the high rate of demand, but warned that when such supporting factors fail, association co-operation will be needed by every producer. He spoke highly of the good which will derive from the installation of provincial directors and the formation of area groups. The latter will be particularly effective in outlying regions of Canada.

In place of Earl Peterson, president of N.C.M.A., who was unable to fill his scheduled talk because of illness, Herbert J. Vincent, Cinder Block, Inc., Detroit, Mich., a director of N.C.M.A., presented the greetings of the association in the United States to the meeting. He congratulated N.C.P.A. on its rapid growth and promised all aid to any of the nearby Canadian producers at any time. He invited all those present to visit his plant, to inspect the six new autoclaves which have been placed in operation.

Alex D. Wylie, chairman of membership committee and one of the founders of the association (left), and Fred W. Reinhold, Buffalo, N.Y., honorary director.

The guest speaker at Monday's luncheon was John Marshall, O.B.E., editorial department, Windsor (Ont.) *Star*, He spoke on *Canada in the World of Today*, relating instances of Canada's influential progress in external affairs, relatively little known by her citizens. Mr. Marshall has made nine trips to various sessions of the United Nations meetings in New York. He told his audience that in these visits he had an excellent opportunity to observe what the member nations are doing for one another. He feels that Canada's influence in the U.N. deliberations is far greater than might be warranted by its population, and that this is due to the world feeling that the country is large enough to be respected but is not so large as to be feared.

Herbert J. Vincent, Detroit, Mich. (left), and John Marshall, Windsor, two of the speakers.

Officers, directors and speakers at the luncheon head table included the following (above): Messrs. Scott, Henderson, Eakins, McPherson, Cooper, Pennachetti, and Frazer; (below): Coleman, Ryan, Rowen, Green, Hadley, and LaFlamm.

Left: Members admiring a salmon presented to the banquet by Paul Klemens, Vancouver, Wash. (second from left). Others include (left to right): W. H. Kirkpatrick, L. J. Murray, and Garnet Frazer.

Right: W. P. Markert, Chicago, Ill., director of promotion, N.C.M.A., who described his association's promotional program.

Mr. Marshall expressed great admiration for the role played by the Canadian Air Force as increments of the NATO forces in Europe and Korea. Their good reputation makes them ideal salesmen for Canada, as well as in Palestine, Indo-China, and other trouble spots where they now serve. He told of the re-building which has been done in Europe. Construction has been accomplished with a proper regard for beauty.

W. P. Markert, director of promotion, N.C.M.A., Chicago, Ill., in a highly educational presentation, told of his association's promotional program, using slides descriptive of the many brochures which have been furnished to help members in the sales of their products. He stated that the *Concrete Masonry Pictorial* now enjoys 20,000 circulation, up 15 percent in the last year. Another publication, *Facts About Concrete Masonry*, is now being revised and will appear soon in a new format.

Mr. Markert described a proposed new system of distributing photographs which he offered to the meeting for possible adoption. He also showed slides illustrating a new concrete masonry unit which can be produced with 3/8-in. architectural indentations in triangular or rectangular shapes on the face of the unit. These units, he revealed, will be limited to production by members of the association; and machinery manufacturers will be able to make attachments available early this summer to those desiring to offer this treatment to their customers.

Especially interesting to the producers was the message presented by Jarmine C. Craig, vice-president, Chrysler Corporation of Canada, who discussed *Employee Relations*. He said he felt that his subject was especially appropriate, in that the week had been designated "Brotherhood Week". He drew parallel examples between the employee relation work of his company and similar work which must be done by every employer. He feels that the effective use of people is the key to success, and that its manpower is the most important of the four M's of business—money, materials, management, and men.

Mr. Craig added that of all human values, none is more important than the dignity of the individual, and that an appreciation of this truth imposes a challenge to all. He posed and answered the three questions facing every worker: (1) the progress he makes on his job, (2) its future possibilities, and (3) how he may prepare for something better.

John T. Pennachetti, Thorold, Ont., made a report as chairman of the legislation and nominating committees. He reported that the directors of the association have decided to follow the pattern of the N.C.M.A., of electing 15 directors for varying terms of 5-, 4-, 3-, 2- and 1-year terms, these being so designated by the directors after election. The directors will also appoint from their membership a president, a vice-president, and a secretary-treasurer; and the regional directors will be nominated from the floor. Mr. Pennachetti spoke of the need of the association for greater regional activity, and for the similar need each region has for concerted action from the national association. He stated that for the first time panel discussions are scheduled in the program this year on concrete pipe, brick, specialties, and prestressed

A group of American manufacturers attending the meeting (left to right): Herbert F. Geist, Cleveland, Ohio; and Jesse Besser, Robert F. Hastie, and Carl Olson, all of the Besser Company, Alpena, Mich.

G. LaFlamm, (second from left), president of the Quebec regional group, and his officers, attending the meeting.

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concrete, and urged attendance at these concurrent meetings.

Relationship of the N.C.P.A. with the National House Builders Association was described by W. M. McCance, eastern vice-president of the latter organization, in a talk containing considerable data on its activities. This association comprises 25 groups of builders in various locations in Canada, plus three institutes of research. Mr. McCance stated that 73,000 homes had been built in the Dominion in 1952, 85,000 in 1953, 102,000 in 1954, and 130,000 last year—all by private enterprise.

He cited three major problems which may influence home building in the future: (1) financing, because of a current shortage of sufficient funds for this purpose all over Canada; (2) lack of major trunk services in certain areas; and (3) inability of 80 percent of the buyers to qualify under the present National Housing Act requirements.

Mr. McCance listed several ways tht N.C.P.A. could help in solving these problems. He warned that new designs and trends in exterior treatment, prestressing, built-in equipment, and "dry-wall" construction are big trend possibilities which the industry members must realize.

Gordon Schmidt, Northern Pigment Company Ltd., gave an address illustrated with slides showing the use of mineral pigments in concrete units. He described the blending of primary colors and subsequent combinations which are effective in decoration.

J. Rae Perigoe, Presentation of Canada Ltd., gave a report on publicity and public relations of the association, stating that on the very small budget ($3,300) no advertising was done. All publicity was obtained through the media of stories on activities given the association by trade magazines, etc. He sought specific ways to remedy the situation.

Carson Luke, Paris Dunbrick Company Ltd., Paris, Ont., gave a report of the treasurer, and presented the budget for 1956. A resolution was presented and approved by the meeting for additional assessments of members (in addition to dues) to make up a $2,500 deficit in this budget as follows: Class A members, $50; Class B, $45; Class C, $40; Class D, $35; Class E, $30; and associate members, $25.

Jack L. Ryan Jr., chairman of the technical committee, in making his report, stated that it is necessary to convince the government agencies in

D. E. Mason (left), director of building research, Besser Company, Alpena, Mich., and C. A. Sirrine, Detroit, Mich., executive secretary, Concrete Products Association of Michigan. The latter described the activities of his association.

Ottawa that the national building code be changed in certain respects to give concrete masonry better standing. At present no concrete units are permitted in this code for under-grade use. He told of several studies being made to step up the research programs, and if sufficient funds are available, to employ a director of research.

J. A. Jones, Central Mortgage and Housing Corporation, Ottawa, gave a factual report to the meeting regarding the housing situation in Canada. The record construction of 130,000 residences in 1955 was due mainly to easier terms and higher incomes. This program used 6,000,000 bbl. of cement. Winter construction, tried last season for practically the first time throughout Canada, brought many headaches to builders. The severity of the weather caused frozen mortar, wet basements, and green block deliveries in many cases, all constituting bad publicity for the industry.

According to Mr. Jones, there are many old houses in Canada, citing a survey which indicated that there

Clifford Carter, C. E. Marley Ltd., Windsor, Ont., who spoke on outdoor advertising.

are 350,000 over 75 years old and 500,000 over 50 years old. This situation should, in his opinion, furnish a good market for concrete masonry to be used in repairs, etc. Generally, he did not exhibit optimism over the 1956 prospects for housing, saying that lenders are apprehensive about general conditions. This atmosphere makes for money scarcity and retrenchment. However, Mr. Jones feels that the housing demand will be stable.

C. A. Sirrine, executive secretary, Concrete Products Association of Michigan, Detroit, Mich., confined his talk mainly to two comments regarding methods of properly educating the consumer. He said that specifications today are often found which contain serious inadequacies. In Michigan, he reported, a joint committee was formed by the association and the architects' group, to correct certain practices. In the 13 months of such co-ordinated effort much good was accomplished. Over 4,500 copies of the recommended specifications issued by the group were distributed.

On the second subject, that of prefabricated concrete lintels, Mr. Sirrine emphasized that these must be engineered as beams. Stocks of lintels are often found that have been made without due consideration of the loads which such members must carry in the structure. This practice must be discontinued, to provide against structural failures and to protect the producers who build lintels properly.

Walter Ball, National Research Council, Ottawa, discussed building problems relating to concrete units. He discussed the dimensional stability of the product, and said he felt that more emphasis should be placed on the actual operating conditions encountered on jobs, than on the need of curing or drying blocks to a low point prior to delivery. The extreme conditions of climate in Canada account for much of the council's research on this subject.

Clifford Carter, C. E. Marley Ltd., Windsor, Ont., spoke on outdoor advertising for the industry. He substituted for J. F. Pitts of his company, who was unable to attend the meeting. Mr. Carter described as typical the outdoor advertising done by the Seabright Company, Wheeling, West Va., consisting of billboard messages. He emphasized that this type of advertising can be used by small as well as large operators, as the average cost of this type of advertising is about 16 cents per 1,000 "impressions".

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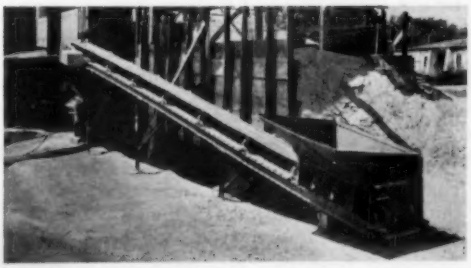

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A.C.I. Convention Approves Revised Building Code

Another ON THE SPOT Report

APPROVAL of revised building code requirements for reinforced concrete was one of the important actions at the annual convention of the American Concrete Institute, held on February 21 through 23 at the Bellevue-Stratford Hotel in Philadelphia, Pa. Among the important events was the installation of the new president, Frank Kerekes, dean of the faculty at Michigan College of Mining and Technology, Houghton, Mich. The convention drew a record registration of over 900 men. In addition, 94 ladies carried out an active three-day program of entertainment and sight-seeing.

The proposed revision of the building code for concrete construction was the result of five years of work by a committee of 42 members which included many of the leading structural engineers of the country. The chairman of the code committee was Dean Kerekes, and the secretary was J. P. Thompson, Portland Cement Association, Chicago, Ill. The report of the committee had been established in advance for the information of all concerned. With a few minor adjustments adopted on the floor, the approval by the convention sent the complete report to letter ballot by the A.C.I. membership. If approved as anticipated, this new code, which will be designated as A.C.I. 318-56, will replace the 1951 code on about June 1.

The content of each of the 14 chapters of the proposed code was outlined by the chairmen of the several sub-committees dealing with the respective sections, and reasons for changes in the current code were explained. The most important change is the recognition of the "ultimate strength method" for design of sections; the justification of this design method was outlined to the meeting by Dr. E. Hognestad, P.C.A., Chicago, Ill. Other important revisions in the new code refer to flat slabs, columns, and diagonal tension. A new chapter presents the special requirements for precast concrete.

Another recommended practice report which was approved by the convention for letter ballot referred to winter concreting. The report was presented by L. H. Tuthill, Bureau of Reclamation, chairman of the committee which drafted the report. For winter concreting the report strongly recommended air entrainment and the addition of 1 percent of calcium chloride by weight of cement. It was further recommended that with such concrete the time for maintaining a temperature of at least 55 deg. could be reduced to 48 hours and still obtain maximum durability. A significant statement in the report was: "Without air entrainment no additional protection will produce an ultimate durability equal to that obtained with entrained air." It was also stated, "Except for concrete at surfaces, calcium chloride is unnecessary in mass concrete in cold weather." The report covered the use of accelerators, heating of materials, protective coverings and enclosures, curing, and form removal.

Frank Kerekes (left), dean of the faculty at Michigan College of Mining and Technology, Houghton, elected A.C.I. president, being congratulated by C. S. Whitney, retiring president.

Left to right: Richard C. Elstner, Ivan M. Viest, and Eivind Hognestad—all awarded the Wason Medal for noteworthy research.

A report by a committee on *Evaluation of Compression Test Results* was presented by the chairman, William A. Cordon, P.C.A., Chicago, Ill. As concrete is a hardened mass of heterogeneous materials, it is subject to the influence of numerous variables. Variations in strength must be accepted, Mr. Cordon stated, but adequate quality can be produced with confidence if proper control is maintained and test results are properly interpreted. Proper control is achieved by the use of satisfactory materials, proper mixing, and good practices in transporting, placing, curing, and protecting the fresh concrete.

The committee pointed out that discrepancies in sampling, fabrication, curing, and testing of specimens may indicate variations in strength which do not exist in the concrete in place. The producer of the concrete may be penalized unjustly when variations from the average are excessive. The report suggested a specification for structural concrete which contained the following recommendations:

1. Not less than 3 cylinders should be made each day, to be broken at 28 days, and at least one more, to be broken at 7 days.

2. The average of all 28-day tests of each class of concrete, as well as the average of any five consecutive tests for the same class, should be equal to or greater than the required strength, and not more than one test in ten should be less than the specified strength.

Problems resulting from the erosion of concrete in hydraulic structures were discussed by Walter H. Price, Bureau of Reclamation and chairman of the A.C.I. committee which has been studying that subject. The report described the mechanics of "cavitation", which is a type of damage resulting from the negative pressure caused by the collapse of air bubbles carried in water flowing at high speed. This local suction creates cavities in the hardest of concrete, and even in steel liners; the action is aggravated by an irregularity in the surface, or by abrupt changes in slope or curvature. Concrete in spillways and in outlet

works of many high dams has been damaged severely by the force of cavitation.

Erosion of concrete by silt, sand, gravel, or other solids can be as severe as that caused by cavitation. When such damages may be expected, the concrete should be of the highest quality because abrasion resistance increases as the strength of the concrete is increased. Mr. Price also discussed erosion by chemical attack, as by sulphate ground water or by the sulphuric acid action in the crown of a sewer. The report stated that replacement of a portion of the cement by a suitable pozzolan in amounts up to 30 percent will improve the resistance of concrete to weak acid attack.

On the evening of the open day several motion pictures were presented. Two of the films referred to a new lightweight type of concrete known as Siporex, which is made with hydrolyzed foam hardened by cement paste. The first film showed the manufacturing operation in a large factory in Sweden, and the second covered use of precast units of this material for insulating walls and ceiling in residences and apartment buildings in Sweden. It was stated that a factory for manufacturing precast units of the material was opened recently near Montreal, Canada. Another film showed the manufacture of the various prestressed elements of a highway bridge by a concrete products manufacturer and the subsequent erection of the bridge at a site more than 100 miles distant.

Concurrent sessions on shrinkage of concrete and on prestressed concrete were held on the forenoon of the second day; Professor J. M. Raphael, University of California, presided at the former, and Thor Germundsson, P.C.A., Chicago, Ill., at the latter session. Regarding the problem of shrinkage in concrete floors, Robert R. Sheridan, Eastman Kodak Co., Rochester, N. Y., described the experience with a building erected at the Kodak Park Works in 1939. The building was 275 ft. long, four stories high; it has a reinforced concrete frame, and was erected as a single unit without contraction joints. Electric strain gauges which were buried horizontally and vertically in the concrete in several locations, have been under observation during the 16 years since erection. Drying shrinkage in the order of 0.6 in. horizontally and 1.1 in. vertically has been indicated.

"Creep strain" of concrete under sustained compressive stress was discussed by F. E. Seaman, Lock Joint

Thor Germundsson, P.C.A., Chicago, who presided at the session on prestressed concrete.

Pipe Co., Wharton, N. J. He emphasized the distinction between elasticity of concrete and creep strain. Tests under sustained loading have shown that the former is not affected by accelerated curing (autoclaving) before loading, but creep strain is reduced greatly by such treatment. The functions involved in the curing of the cement gel formation appear to be of great importance in prestressing operations.

The problem of preventing cracks in concrete masonry construction was presented by R. E. Copeland, National Concrete Masonry Association, Chicago, Ill. Use of crack-control joints, spaced not too far apart, has offered the best preventive for cracks due to shrinkage and temperature changes. It has been observed that the tendency to cracking increases with the ratio of length to height of blank walls. To a question from

R. E. Copeland director of engineering, National Concrete Masonry Association, Chicago, who covered the problem of preventing cracks in concrete masonry construction.

the floor as to whether weaker mortar would reduce cracking, Mr. Copeland expressed the opinion it would not.

Tests on the influence of carbonation on the shrinkage of concrete masonry units were reported by Joseph J. Shideler, P.C.A., Chicago, Ill. During a study of the volume stability of concrete blocks it was noted that during drying in air at constant relative humidity the specimen first lost weight slowly while continuing to shrink. It was concluded that this was caused by a reaction between the carbon dioxide in the air and the products of cement hydration. Tests were then conducted with different amounts of carbonation and different conditions of curing. The conclusion of the investigation was that the volume stability of block cured in steam at atmospheric pressure is greatly improved by carbonation.

Construction practices to prevent plastic shrinkage and resultant cracking in the exposed surface of freshly placed concrete were outlined by William Lerch, Research and Development Division, P.C.A., Chicago, Ill. This type of cracking is caused by rapid evaporation from the surface of the concrete. Corrective measures are indicated when weather conditions (chiefly wind and high temperature) are such as to cause a high rate of evaporation. The following procedures were suggested by Mr. Lerch: (1) reduce time between placing and start of curing; (2) apply curing compound, wet burlap or light-colored paper as early as possible; (3) protect with temporary covering or apply a fog spray during any appreciable delay; (4) erect wind breaks to reduce velocity over the concrete; (5) provide sun shades to control temperature in the surface.

At the session on prestressed concrete two papers were presented on tests of beams and two papers on construction projects which utilized prestressed beams. Professors Nordby and Venuti of Purdue University reported the results of beam tests made with steel strand and expanded shale aggregate under both static and fatigue loading. Among the conclusions drawn were these: (1) expanded shale of the type tested made acceptable concrete for prestressing; and (2) the steel strand appeared superior to smooth wire in bonded type units because it was easier to tension and it had greater mechanical bond.

Messrs. J. R. Janney, E. Hognestad, and Douglas McKenry, all of P.C.A., reported on tests on the rela-

tive performance of beams containing various types of prestressed and conventional reinforcement. From the tests it was concluded that an ultimate strength analysis permitted satisfactory prediction of flexural strength and that the strengths of pre-tensioned beams and the corresponding post-tensioned bonded beams tested were about equal, and 20 to 40 percent higher than corresponding unbonded post-tensioned beams.

The design and construction of the bridge over the new control gates at Niagara Falls, which included prestressed beams 70 ft. long, were described by A. M. Lount, of Lazarides, Lount and Partners, Toronto, Ont. The prestressed concrete roof girders of a high school at Springfield, Mo., were described by Eric C. Molke, of Prestressing Research and Development, Inc., San Antonio, Tex.

Charles S. Whitney, partner in Amman and Whitney, Milwaukee, who has been president of A.C.I. for the last year, presided at the well-attended traditional award luncheon. He presented the following awards:

Henry C. Turner medal to Franklin R. McMillan, honorary member, "for 40 years of outstanding leadership in . . . concrete and concrete construction."

Alfred E. Lindau award to John S. Parcel, "for inspired authorship and teaching."

Leonard C. Wason Medal for the most meritorious paper to co-authors Charles S. Whitney, Boyd G. Anderson, and Edward Cohen.

Leonard C. Wason Medal for noteworthy research to Dr. K. C. Moody, Dr. I. M. Vrist, R. C. Elstner, and E. Hognestad.

Honorary membership to Dean Morton A. Withey.

Mr. McMillan was for many years in charge of all laboratory activities of the P.C.A. He is author of the A.C.I.'s well-known *Concrete Primer*, and was president of the Institute in 1936.

In his presidential address Mr. Whitney reviewed the multiple activities of the Institute during the last year, which included co-operation with other technical organizations in gathering, correlating, and disseminating information for the improvement of concrete products and structures. He reported the Institute membership at an all-time high of almost 7,000. He announced that a site had been purchased and plans are being drawn for an Institute-owned headquarters building in Detroit.

The tellers, appointed earlier, reported the election by letter ballot of the following new officers, who assumed their duties at the close of the convention: president (1-year term), Frank Kerekes, dean of the faculty, Michigan College of Mining and Technology; and vice-president (2-year term), Douglas McHenry, P.C.A., Chicago, Ill. The following directors were chosen for a 3-year term: Clayton L. Davis, Universal Atlas Cement Co., New York, N. Y.; Bruce E. Foster, National Bureau of Standards, Washington, D. C.; J. W. Kelly, University of California, Berkeley, Calif.; and L. H. Tuthill, U. S. Bureau of Reclamation, Denver, Colo.

Franklin R. McMillan (left), who was awarded the Henry C. Turner Medal, with John I. Parcel, who received the Alfred E. Lindau Award.

Four unique projects were described at a session devoted to construction. J. J. Closmer, The Preload Company, New York, discussed the 290-ft. diameter dome over the new sports stadium at Havana, Cuba. This is believed to be the largest span ever constructed with a relatively flat spherical concrete shell having a prestressed edge member. The dome shell is 6 in. thick at the center, thickening in the outer 33 ft. to 12 in. at the dome ring, to which it is monolithically connected.

Raymond E. Davis Jr., Prepakt Company, Cleveland, described the construction of piers for the Mackinac Bridge, which will span the straits between the upper and lower peninsulas of Michigan. The 34 foundation piers required placing over 400,000 cu. yd. of concrete by the prepacked method. In one 24-hour period in the spring of 1954 6,250 cu. yd. of aggregate, was consolidated, a record for placement of underwater concrete. Coarse aggregate was placed directly in the caissons or cofferdams by self-unloading boats at rates up to 2,500 t.p.h.

One of the tallest prestressed structures to be erected by the lift-slab method will be the Litchfield County Hospital at Winsted, Conn. The design was described by James M. Minges, of Marchand and Minges, West Hartford, Conn. The building will comprise five full stories and penthouse. The roof will be lifted 62 ft. Floor slabs will be 43 by 182 by 8½ in. in size, to be supported on 14 wide-flanged steel columns. The slabs will be prestressed in both directions by post-tensioning.

The special problems in another unique project were described by E. R. Crocker, Bureau of Reclamation. In excavating and lining the Telecote Tunnel to deliver a supplemental water supply for Santa Barbara, Calif., inflows of water were encountered up to 9,000 g.p.m., with temperatures which reached 117 deg. F. Special methods were developed for tunneling through unstable earth and subsequently placing the concrete lining. Some of the ground water which could not be sealed off and was found to be potable was permitted to flow into the completed tunnel.

The final session was a spirited panel discussion of questions submitted from the floor and culled from correspondence, for which A. Allen Bates, P.C.A., a former A.C.I. director, was chairman. The panel to whom questions were directed included the following prominent concrete men: Frank Kerekes, Paul Ellsberg, Thor Germundsson, Lewis Tuthill, Paul Rice, Ray Reese, Bryant Mather, Carl Wuerpel, Bruce Foster, Alexander Foster, and Roger Corbetta. The range of questions included high-strength concrete, thermal expansion of aggregates, central-mixing, temperature of concrete for winter pouring, control of temperature in 100-deg. weather, significance of the mortar test reported on a mill-test sheet, performance of prestressed *vs.* conventional reinforcement when exposed to fire, comparison of welding *vs.* overlapping of bars, and many other subjects.

For the unusually large group of out-of-town ladies who accompanied their husbands to the convention, sight-seeing such as only the Philadelphia area can offer was in order on each of the three days. Following a forenoon coffee hour, bus trips were arranged through the courtesy of the local committee.

For the men the arrangements for each day included a Continental breakfast at the hotel, which was well attended and greatly appreciated. The entire convention was handled on schedule, which reflected excellent planning.

This is the 129th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Another BESSER BOOSTER

Talking about the VIBRAPAC

"I always felt it was the Best Machine!"

These words were spoken by H. Melvin Binkley, President of Binkley & Ober, block-makers in East Petersburg, Pennsylvania. The opinion is based on actual experience.

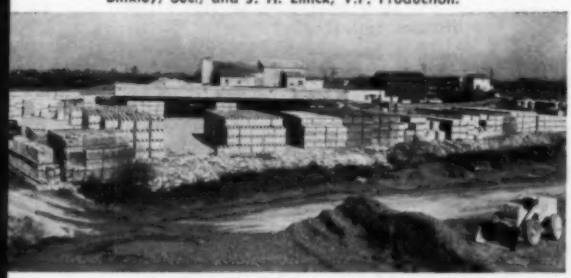
In the sand and gravel business since 1940, Binkley & Ober installed their first Besser Vibrapac machine in 1946. Block sales forged ahead and when in 1952 the company required additional block making equipment, it was natural for them to secure another Vibrapac machine. Today, both Vibrapacs are working to full capacity, producing high-quality block for industrial plants, homes and public buildings in the Petersburg area.

If you want TOPS in block making machines, specify VIBRAPACS. Contact your nearby Besser representative, or write directly to the Besser office for descriptive literature.

BESSER Company • Box 131, Alpena, Mich., U.S.A.

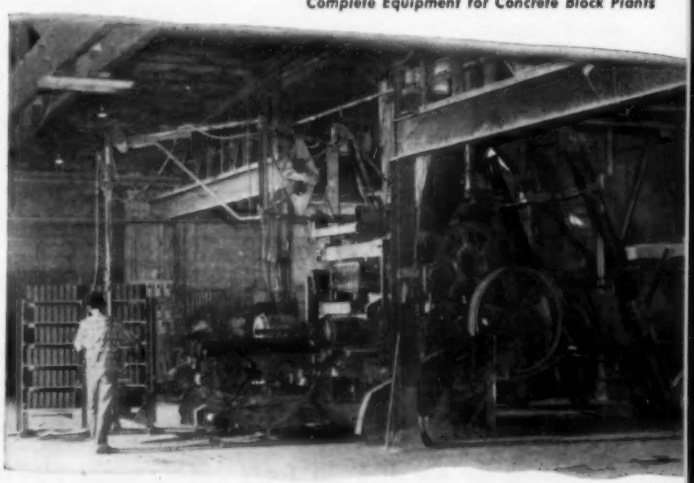
Complete Equipment for Concrete Block Plants

Binkley & Ober executives: (left to right) H. M. Binkley, President; H. B. Ober, Treas.; C. G. Ober, V.P. Sales; H. M. Binkley, Sec.; and J. H. Emick, V.P. Production.



Yard scene at Binkley & Ober. Note neat stockpiles of block due to block cubing.

Interior view showing cubing setup. Besser Bridge Crane Block Cuber eliminates lifting block by hand. Speeds truck loading.



One of two Besser Vibrapacs in Binkley & Ober plant. Note mixer installed in rear of machine. Mixed materials are raised to Vibrapac by means of a Besser Skip Loader.

National Housing Center, Washington, D. C.,

where Besser maintains a permanent exhibit of concrete masonry. Be sure to visit this fine display.

A 8683-1PBC

BESSER VIBRAPAC

first in concrete block machines

Conventional Curing of Block— Typical Questions Answered

This series of questions and answers constitutes a portion of a paper on Modern Curing of Concrete Block, by Morris H. Gross, which appeared in the March issue of the Concrete Manufacturer.

1. What is the best type of construction for a kiln?

The best type of construction for a kiln is a floating construction. If made of concrete, use a material that has a low moisture absorption. The footings should extend at least 6 in. below the frost line. The floors and ceilings of each kiln should be independent of any other kiln and should be free to move with expansion. The roof should not be tied in structurally with the walls.

2. What is the best type of roof and insulation?

A good type of roof construction can be any of the popular types of reinforced slabs or monolithic pour, with expansion points. A good type of insulation for the roofs is 2 in. of foam glass. An overlapping layer of felt should be well mopped in between the insulation and the slab to act as a vapor barrier. Topping can be a 4-ply composition roof with a gravel topping.

3. What is the most economical size for a kiln?

The most economical size for a kiln varies with every plant. As a general rule, the capacity of the kiln should be such as to be capable of being filled in the same period of time as required for steaming the block under normal conditions.

4. Are long narrow kilns preferred to shallow wide kilns of same capacity?

Physical dimensions are not of too great importance as long as the length does not exceed 70 ft. and the width 15 ft. and capacity is not in excess of 2,500 block.

5. What is a good method of determining the size of boiler for maximum economy?

An approximate method for determining the horsepower requirements is to use a figure of 1 hp. for every 30 8-in. equivalents being cured simultaneously, exclusive of any need for other purposes, such as heating, warming water, steaming aggregate, etc.

6. Is a slight excess of boiler capacity a good or bad feature, economically speaking?

Excess boiler capacity is always a good thing to have in a block plant. There is always some way in which excess steam capacity could be used to advantage, such as cleaning or pre-warming kilns, racks, and pallets in cold weather.

7. How much boiler capacity would you consider proper for handling plant heating and other uses in the average one- and two-machine plant setup?

No definite amount of boiler capacity can be allocated for plant heating. This factor depends upon the physical structure of the plant, the desired temperature to be maintained, and the geographical location.

8. Which is the most efficient boiler type for a high-temperature curing setup, a high-pressure boiler or a low-pressure unit?

Any boiler which is properly fired and maintained and which has sufficient capacity to generate the steam required at an efficiency of at least 75 percent is an efficient type of boiler. The physical value of the pressure generated in p.s.i. does not have any bearing. High-pressure steam can be reduced to the pressure desired for proper curing.

9. What is the best location for steam inlets into a kiln?

The best location for the steam inlet jets in a kiln is at the front top center. This permits the velocity of the incoming steam to create a free asperating action to distribute heat and moisture uniformly throughout the length and breadth of the kiln.

10. What is the best or recommended temperature rise in deg. F. per hour?

The recommended temperature rise in a kiln is approximately 60 deg. F. per hour for the aggregate itself. Do not confuse the air temperature rise with the aggregate temperature rise, as these two temperature rates are very different. The aggregate temperature rise will lag behind the kiln air temperature rise.

11. How will temperature rise affect the kiln temperature at equilibrium?

A kiln temperature rising too fast will increase the equilibrium temperature and will waste heat.

12. How do results from a kiln temperature of 150 deg. F. compare with 170- or 180- deg. F. provided that there are no objections to the higher temperatures?

If the equilibrium temperature of the kiln is found to be 150 deg. F. and the steaming is continued to 180 deg. F. the block will, as a general rule (depending upon the aggregate), suffer a reduction in strength.

13. What is meant by "equlibrium" and how can this be checked?

Equilibrium temperature is said to exist in the kiln when the temperature in the block is, for all practical purposes, the same as that of the air surrounding the block.

14. Is it necessary to check equilibrium repeatedly?

It is not necessary to check the equilibrium temperature repeatedly in a kiln unless (1) the physical condition of the kiln has been changed by cracks, a broken wall, etc.; (2) the type of aggregate has been changed; or (3) the capacity in 8-in. equivalents has been changed materially.

15. Do equilibrium temperatures vary with material types?

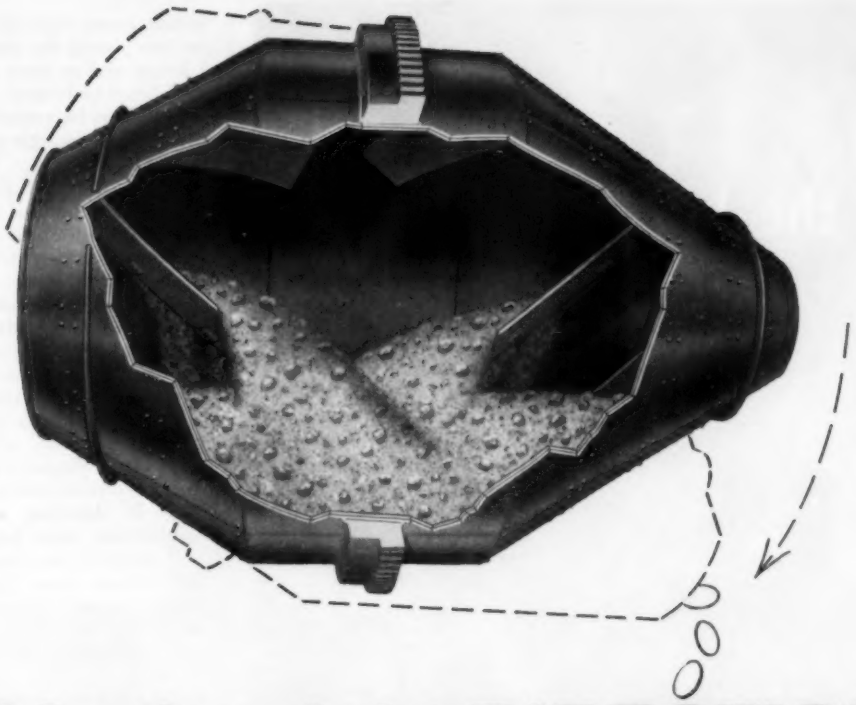
The equilibrium temperature varies with each kiln, with the aggregates in each kiln, and with the capacity of the kiln. The same kiln having 2 different aggregates will have 2 different equilibrium temperatures. The same holds true if the kilns are constructed the same but have different number of blocks, even though the aggregate is the same.

16. What is the proper steam pressure range for conventional curing, i.e., the header pressure at the nozzle of the kiln?

There is no such thing as a proper pressure at the nozzle of the kiln. The pressure at the kiln nozzle depends upon the *quantity* and *velocity* desired for each kiln, which in turn depends upon the physical dimensions and contents of the kiln.

17. How important is presetting? Do seasonal temperatures have any bearing on presetting?

Presetting is very important, and seasonal temperatures do have a bearing on it. Ideal presetting temperature should not be below 70 deg. F., and the length of time of pre-



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Aggregates are folded over in the bottom of the drum — are lifted to a minimum degree. Materials can NOT drop down with a smash from top to bottom of the drum. Thus the greatest cause of wear is completely eliminated.

This is not possible with any other type of mixer. Long life, low maintenance cost are the result.

These Smith Tilters with their non-lift mixing easily handle large stones and boulders so frequently specified by engineers these days. That's an important plus value for you.

SIZES: 1, 2, 3, 4, 6, and 7½ yds. Write for details.

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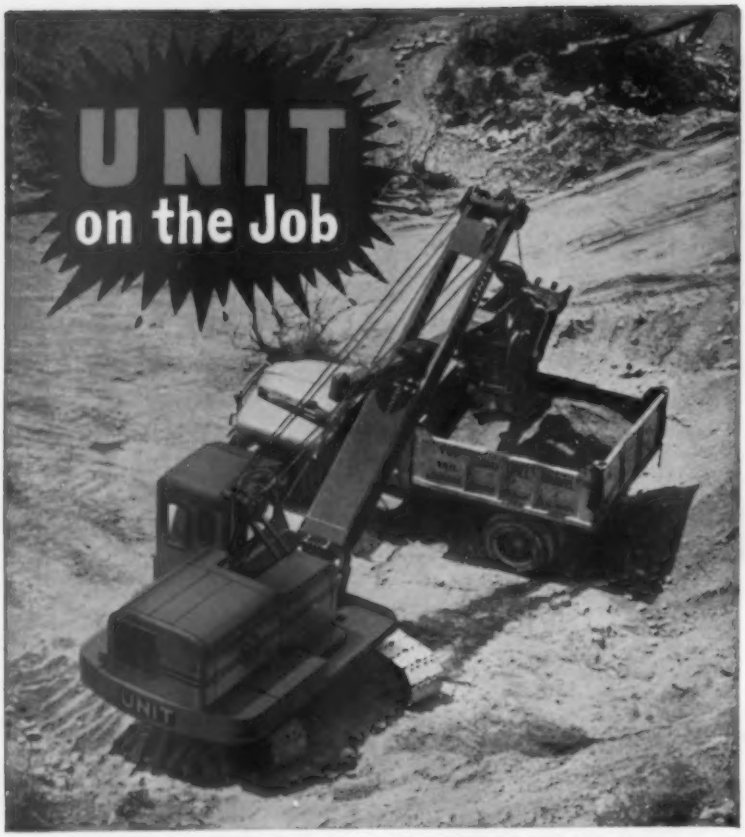

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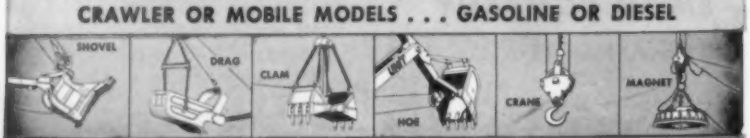

All Models Convertible to ALL Attachments!

setting varies with the aggregate. In no case should the time be less than 1 hour; and in most cases it should be 2 hours or longer.

18. What happens if block are not preset long enough when the steam is turned on?

If blocks are not allowed to preset a sufficient length of time before the steam is turned on, the blocks will become weakened and develop surface crazing cracks.

19. What determines the length of the steaming period?

The length of the steaming period is approximately the time (in minutes) which elapses between the point at which the blocks reach the initial block temperature after the present period, and the point at which equilibrium temperatures is reached.

20. If steaming continues after equilibrium, what happens?

If steaming continues after equilibrium temperature has been reached, the block gives off moisture instead of taking it on. This water is chemically combined with the cement and weakens the block.

21. How important is the soaking period, and what time limit is considered correct for best results?

The soaking period is very important as the block is curing in the heat and high humidity which are ideal conditions for setting up concrete. The longer the soaking period, the better the results. The miminum soaking period should be not less than 12 hours.

22. Could you give any data on size of piping, i.e., headers and nozzles, for an average standard plant, assuming that boiler hp. is ample and pressure is within the proper range?

Piping, header, and nozzles are a matter of engineering design, depending upon the physical conditions involved in the particular plant in question.

23. Which would give the best results on quick reduction of moisture content for the common kiln setup —(a) to leave the racks in the kilns until the temperature has dropped considerably, or (b) to empty the kilns as quickly as possible after the doors have been opened?

The best results for a quick reduction of moisture under standard curing conditions is to remove the racks from the kiln as soon as the kiln doors are open and to allow the blocks to cool to outside temperature before cubing.

24. If it were feasible, would it be advisable to reduce the moisture content of the block to meet A.S.T.M. (40 percent of maximum) imme-

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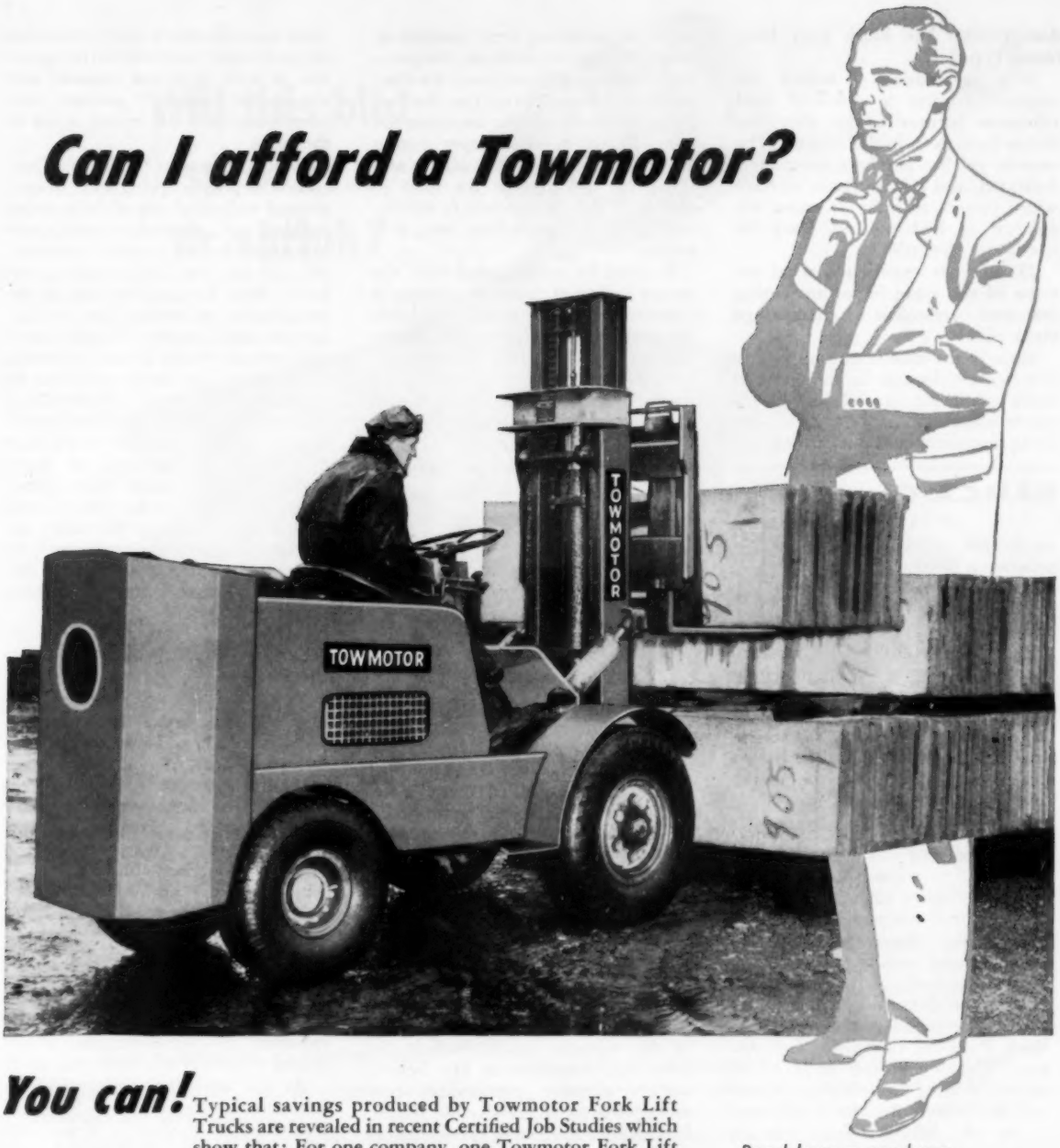

You can! Typical savings produced by Towmotor Fork Lift Trucks are revealed in recent Certified Job Studies which show that: For one company, one Towmotor Fork Lift Truck paid for itself in 10 months. For another company, six Towmotor units saved $50,000 in a single year.

It's an amazing fact that most companies now using outdated materials handling methods are, through hidden costs, already paying the price of Towmotor equipment. To discover how you can save money on your materials handling, call your Towmotor representative today! . . . or write for Certified Job Studies covering your industry. TOWMOTOR CORPORATION, Div. 1304, 1226 E. 152nd St., Cleveland 10, Ohio.

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America's ***best engineered*** *fork lift truck*

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diately after the block have been initially cured?

It is not feasible to reduce the moisture content to A.S.T.M. specification immediately after the blocks have been initially cured. The cement gel has not been completely hydrated, and it is necessary to have water present in order to cause the cement to hydrate and reach its maximum strength.

25. In your experience, what are some of the more important curing featurees overlooked by the average block plant?

Some of the most important curing features overlooked in the average block plant are as follows: inadequate boiler capacity; incorrect pipe sizing; incorrect curing temperatures; improper presetting time; insufficient velocity to insure uniform temperature distribution throughout the kiln; too slow a temperature rise; lack of proper thermometers to ascertain the point at which the proper curing temperatures have been reached; and laxity on the part of the man in charge of the curing cycle in following the proper procedure, once it is set up.

It must be remembered that the proper curing of concrete masonry is a processing problem and not a heating problem. The proper installation of a curing system is the job of a person thoroughly familiar with the thermodynamic properties of steam and air, also with boilers, preheating, and water treatment.

N.R.M.C.A. Convention

(*From page* 235)

on the job. While correction of such practice is beyond the producer's responsibility, he can exercise good judgment by diplomatically advising the customer as to the proper way of testing and handling his product. Mr. Nunan was of the opinion that the producer himself must be his own toughest testing inspector. He posed the question at the conclusion of his talk that the industry has the brains, the correct information, the proper equipment, honesty, and integrity—so *why not use it?*

Merchandising Panel In a panel discussion of the merchandising practices in the ready-mixed concrete industry, four representatives of producers located in different sections of the country spoke on their individual practices on this subject. Quentin W. Best (vice-president, Consolidated Rock Products Company, Los Angeles, Calif.) outlined steps which are taken after the job is contracted and before any concrete is delivered to the job. Mr. Best feels that this preliminary work pays future dividends in eliminating the probability of misunderstandings.

Mr. Best outlined several items of information required before the start of any ready-mixed delivery: (1) traverse time, to include loading, en route to and return from job, unloading, and any special conditions adding to these elapsed periods; (2) data on placing, to include total yardage in the job, maximum and minimum placing per day and per hour, and the length of the work day; (3) physical conditions encountered at the job, toward the most efficient movement of truck mixers; (4) maximum advance notice of delivery schedules (and changes) to facilitate production planning; (5) advance notice of cancellations of any planned placing of concrete; (6) checking time on delivery tickets by the contractor to keep trucks moving in an orderly manner and provide for better service; and (7) all address information, telephone numbers, names of contractor personnel, emergency contacts, etc., entered on the initial job report and available for instant consultation in the plant.

F. Edwin Schouweiler (Old Fort Supply Company, Inc., Fort Wayne, Ind.), the next speaker, confined his remarks to the attributes of salesmen of ready-mixed concrete, and to the training of these men to accomplish the maximum results in their work. He prefers a graduate engineer as a salesman, one who is unlearned in other fields, but who has the basic background which will help him to absorb training quickly.

Attributes of value to a salesman of this capacity would include the following, according to Mr. Schouweiler: pleasing personality; conservative dress; aggressive but friendly attitude; thorough knowledge of the company, the product, and its possible applications; attendance in the concrete schools whenever held; a thorough knowledge of all his customers and their individual traits; finally, a sincere desire to succeed in the business.

J. G. Goodner (The Dolese Company, Oklahoma City, Okla.) took as his subject of discussion *Good Housekeeping*. Enumerated among the essential points Mr. Goodner made, to achieve a pleasing plant appearance, reflecting increased sales, were: a clean and attractive plant and grounds; the elimination of dust and dirt wherever possible; regular washing and periodic painting of truck units and salesmen's cars; adherence to good safety practices in the operation of truck units and grounds; and use of the company's product, concrete, in paving all service areas in the plant.

John B. Donovan (Valentine Concrete Company, Springfield, Mass.) stressed various phases of the growing problem of obtaining satisfactory aggregates for ready-mixed concrete. He said this was particularly alarming in New England because of the introduction of zoning laws regulating the establishment of ready-mixed concrete producing plants in certain areas where they would otherwise be economically essential. Depletion of a large portion of the sand and gravel deposits adjacent to cities in the East has forced the removal of many plants to other locations where aggregates are available but more costly to utilize. There is an increasing use of certain lightweight aggregates, he said, in some places where the heavier aggregates are approaching short supply.

Street Paving Promotion Ross G. Wilcox, engineer, Highways Bureau, Portland Cement Association, Chicago, Ill., who heads a new activity of that bureau concerned with promoting ready-mixed concrete in city street paving, gave an interesting summary of the long-range program contemplated in this endeavor, to be carried out in conjunction with N.R.M.C.A. The plan was enthusiastically approved by the directors of the latter association last September. Specifically, the program is aimed at developing potential markets in the years ahead, and one that would be effective in the field, as suggested by the opinions of representative ready-mixed producers who were consulted.

At the start the project will be initiated in four cities — Spokane, Nashville, St. Paul, and Akron — as recommended by N.R.M.C.A. In these cities particularly, ready-mixed concrete operators, P.C.A. representatives, and city officials are in a position to be highly receptive to the practical application of the plan.

An economic analysis of the project includes the following activities which it is planned to utilize: (1) develop cost and life data for concrete and competitive materials; (2) prepare publicity which will feature ready-mix operations on local paving jobs; (3) enhance public relations by taking active part in the work of local service clubs, technical and professional societies, chambers of com-

(*Continued on page* 260)

Will this blot spread... or shrink?

NOTHING STRIKES so brutally at human lives as a slum.

Yet of America's many millions of homes, the blot that is a slum covers more than 1 out of every 10... and nearly one-half of all our homes are urgently in need of repair and basic improvements.

Will the blot go on spreading? Or will a concerted, nationwide attack on the causes of slums shrink it, year by year, until it is wiped out? Today, this is a challenge to every American... a challenge that *must* be met.

Your community... your problem!

A slum reaches across blocks, across miles, to sit on your doorstep and demand a price.

You pay it in the threat of crime and juvenile delinquency to your family. You pay the price in higher personal property taxes to fight the disease and crime and poverty that are slum-bred. You pay personally when the value of your home sinks as community deterioration takes another step closer.

Your *firm* pays when the community where you do business goes downhill. Slums automatically mean lower purchasing power and less effective labor.

Good citizenship is good business

It's good citizenship and good business both for your firm to join efforts to check housing decay... to stop slums before they start. In fact, it's the *responsibility* of every business, as it is of every other good citizen, to support community improvement efforts.

Some slums are beyond repair. They should be torn down and a fresh start made. Others can be remodeled, made to conform to better living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Adding your support to the efforts of the millions already attacking the problem, your firm can help stop slums cold and put America's housing standards at a new height.

How to get into action

A group of Americans from every walk of life has formed a new, non-profit organization to help combat home and community deterioration – The American Council To Improve Our Neighborhoods... A.C.T.I.O.N.

Send for a free copy of "ACTION." It explains what A.C.T.I.O.N. is and proposes to do. It also lists booklets, research reports, check-lists, and other material which can help you protect the housing health of your community. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

ACTION

American Council To Improve Our Neighborhoods

Anderson-Dunham, Inc.—
Dominant Louisiana Concrete Producer

Dumping gypsum into the jaw crusher at the Winnfield quarry of Anderson-Dunham, Inc. Pit No. 1 is in the background.

Another ON THE SPOT Report

THE name Dunham is well known in Baton Rouge, the capital of Louisiana. Ted Dunham, who heads most of the enterprises he engages in and to which he contributes the magic of

By ROY L. PECK

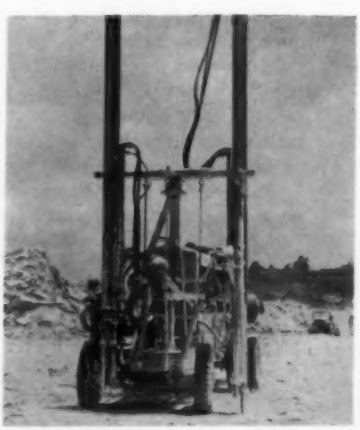
ability, has a fine home on Ted Dunham Avenue, flanking the aristocratic Capital Lake section in the center of the city. From his windows Mr. Dunham can look across this beautiful lake at the monumental 32-story state capital, the highest building in the South (450 ft.). It is one of the many structures across Louisiana for which he has furnished materials. Ted Dunham, at 49, has packed a lot of business progress into the last two decades. PIT AND QUARRY featured Mr. Dunham in "Men of the Industry" (April, 1951, page 75) and described the first plant of the company in the CONCRETE MANUFACTURER (May, 1939, page 69).

When Mr. Dunham organized his company in 1938 and erected his first plant for the production of ready-mixed concrete, it was the largest plant of its type in the entire South. Since then he has built four other such plants in the vicinity. He has also developed a limestone and gypsum quarry at Winnfield, La., an oil contractors' equipment plant at Minden, La., a four-plant layout for concrete production and building materials at Lake Charles, La., and other facilities at Baton Rouge for producing all types of concrete pipe, metal culverts, septic tanks, underground storage tanks, and bituminous asphalt road materials. All these undertakings are successful, and produce a business volume of over $15,000,000 (including the Lake Charles operations) annually. His products reach into the four corners of the state, and with headquarters at the capital city—now a growing industrial center rivaling New Orleans—it is a good bet that Ted Dunham will extend his operations further in the future.

Anderson-Dunham's entry into ready-mixed concrete in Baton Rouge took place in 1938, when a plant was built—now known as Plant No. 1—practically in the center of the city, at the junction of two railroads, the Illinois Central and the Louisiana and Arkansas. Wisely anticipating the industrial growth of the area in the land along the Mississippi River to the north of the city, Mr. Dunham purchased 8½ acres at this strategic point and concerned himself in actively participating in this growth. A tour through this area today proves his judgment sound, for since that time Anderson-Dunham has provided ready-mixed concrete and other materials for a long list of industries which have come into being in that area over the years.

Some of these include Standard Oil Company's $200,000,000 Baton Rouge refinery, one of the largest in the country; plants for Ethyl Corporation, Solvay Process Corporation, Gulf States Utilities, Ideal Cement Company, and Permanente Metals Corporation; a half-dozen

Left: Hauling gypsum to the jaw crusher at the Winnfield, La., quarry. Limestone is stockpiled at right; bin and conveyor in background.



Right: The drill rig at the quarry was fabricated by company employees.

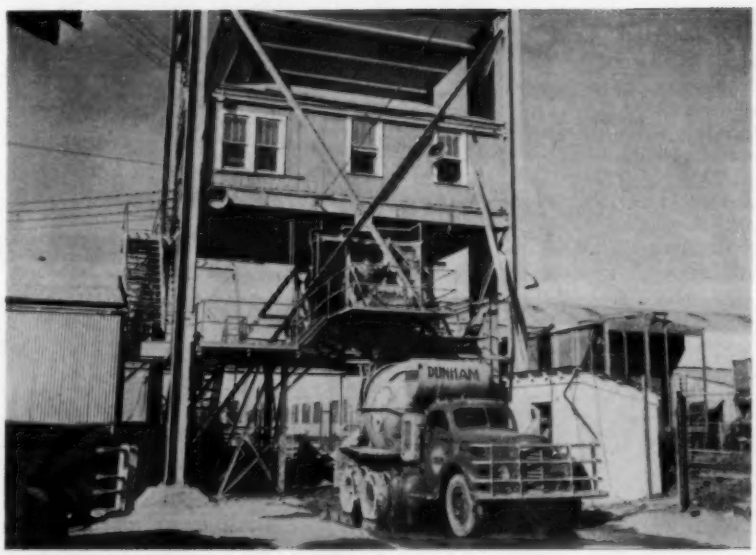
Right: Ready-mix Plant No. 1, at Baton Rouge, La., a trackside operation.

synthetic rubber plants, and many other industries which are a part of the mushroom growth which has taken place. Paralleling this industrial expansion was the accompanying residential growth, the city's population increasing from 35,000 in 1938 to the present 185,000.

The company kept pace with this growth by building another ready-mixed concrete plant in 1952, on a 12-acre plot of land five miles north of the center of town on the Louisiana & Arkansas Railroad. This was in the middle of the newer industrial plant area being developed to the north of the city. To complete this second plant with the utmost speed, the bins, conveyors, mixers, and other equipment used in 1951 to provide 100,000 cu. yd. of ready-mixed concrete for the Atomic Energy Commission's Savannah River Project at Aiken, S. C., for the DuPont Company, were taken from that site and moved to Baton Rouge. Later improvements have made Plant No. 2 the most modern of the company's units.

Sand and gravel aggregates for concrete produced in the first plant was purchased locally, and this practice stands today, these materials coming from the Holloway Gravel Company, Baton Rouge. However, in 1949 Mr. Dunham got into material production. He purchased a 100-acre property near Winnfield, La., from the Solvay Process Division of the Allied Chemical and Dye Corporation, and erected on that site a crushing plant for producing calcite limestone and gypsum. The former is for road stone and aggregate; the latter is shipped to cement plants in several nearby states for use as a retarder in cement manufacture. The annual output of this quarry is 500,000 tons, including 150,000 tons of gypsum.

A description of these deposits may be of interest as the gypsum reportedly is the only commercially available deposit between Sweetwater, Tex., and Plasterco, Va. Core drilling over the area showed about 10 ft. of overburden, underlain by about 40 ft. of calcite limestone, which cover the two deposits of gypsum and anhydrite. The first of these averages 35 ft. in depth, overlying the 110 ft. of anhydrite beneath. Under these strata is a layer of rock salt, which the Carey Salt



A truck-mixer loading from the plant mixer at Plant No. 1.

Right: The concrete pipe plant at Baton Rouge, showing overhead bins and the cement silo.

William Wall, radio dispatcher at Plant No. 1, directing truck movement.

One of the typical mobile radio installations in a truck unit.

Company has mined since 1931.

Geologically, the Winnfield dome is located in an area of Tertiary (Claiborne Eocene) outcrop. The Cookfield, Cook Mountain, and Sparta formations crop out on hills encircling the dome. The Sparta, Cave River, and Wilcox Eocene deposits occur in the low areas in the central part of the dome. At present, the Cave River and Sparta sediments are exposed in the walls of the quarry. Pleistocene deposits are present in part of the area accompanied by calcite cap rock. This rock is Cretaceous in age, and forms a ridge around which the Tertiary sediments were deposited. A 35-ft. maximum face of gypsum is now exposed in an area of about 15 acres. It is massive, light to medium gray in color, and occurs as a continuous layer of irregular thickness between the calcite and anhydrite rocks, the contact being sharp and distinct.

The chemical composition of the anhydrite-gypsum deposit consists of about 78 percent by weight of $CaSO_4$ (lower zone), 87 percent gypsum ($CaSO_4$ H_2O) and 10 percent anhydrite (upper zone). At the contact of the base of the anhydrite with the underlying salt, there is an active water flow in a water-bearing stratum of "anhydrite sand". If the gypsum averages 20 ft. in depth, there is an indicated deposit of 3,700,000 tons available. The whole dome is slightly elliptical, with a northwest-southeast axis.

Plant No. 3 of the company was completed in 1954. It is located on a 10-acre site three miles southeast of the city's center, near the state university area. It is ideally situated to furnish concrete for the many residences and schools which are being built nearby.

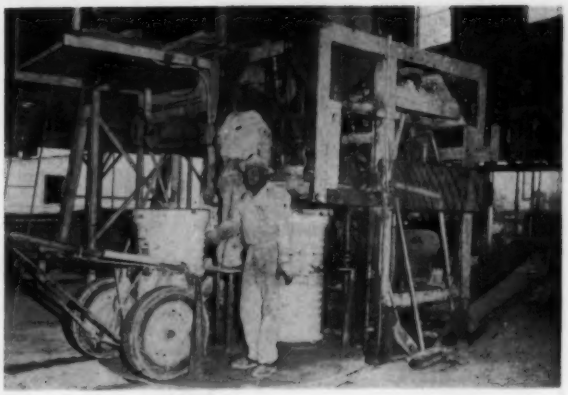
Plant No. 4 is now under construction on a 10-acre plot of land five miles east of the city on U.S. Route

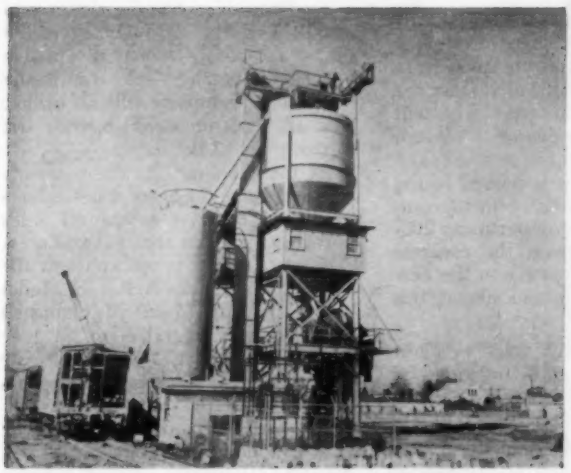
The concrete pipe storage yard, stockpiles of aggregate, cranes, and the asphalt plant (background).

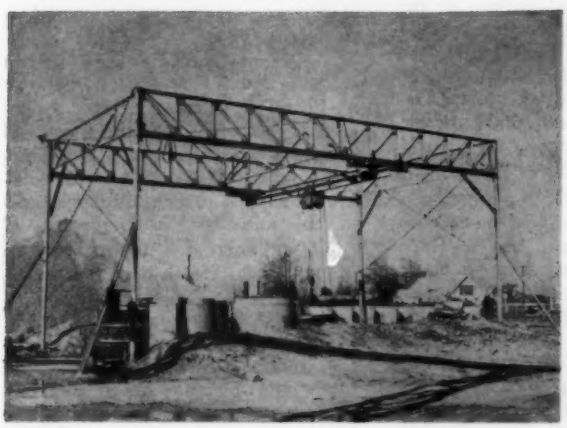
Right: One of the pipe machines in operation at Plant No. 1.

Below, left: Ready-mix Plant No. 2, with pipe storage yard in the rear.

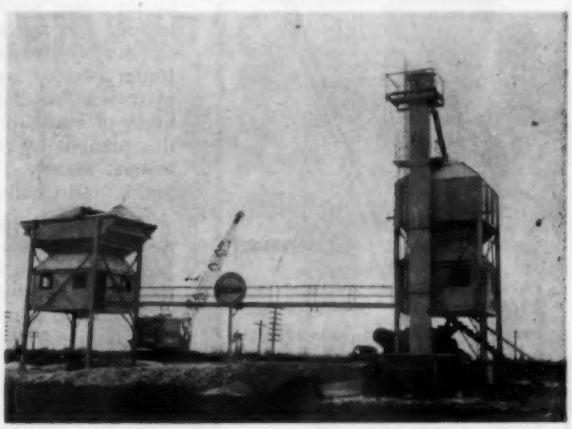
Below, right: Loading materials into the conveyor hopper at Plant No. 2.







Making reinforced concrete pipe by vibration-casting at Plant No. 2.



The two-stage ready-mix loading plant at Plaquemine, La.

190 to Hammond, La. It is in the path of a predicted growth in that section.

The fifth ready-mixed concrete plant is operating in Plaquemine, La., on the western bank of the Mississippi about 17 miles to the southwest of Baton Rouge. This plant will serve the concrete needs of Port Allen and other municipalities across the river, which cannot be reached economically from Plant No. 2 by using the bridge.

Equipment at the quarry in Winnfield include four 3-cu. yd. Bucyrus-Erie shovels and six 20-ton Euclid trucks. Drills used in shelf mining were fabricated by the company, and they are operated by air from a Schramm compressor. A 36-in. by 275-ft. Barber-Greene belt conveyor carries the rock to the crushing plant. This primary is a 25- by 40-in. Cedarapids jaw crusher having a capacity of 150 t.p.h. It discharges onto four 4- by 12-ft. Pioneer vibrating screens. A 30- by 33-in. Cedarapids hammermill secondary crusher handles the anhydrite, while a double-roll Cedarapids crusher accomplishes the gypsum rock reduction. An 8-compartment bin receives the materials from the conveyor, and shipment

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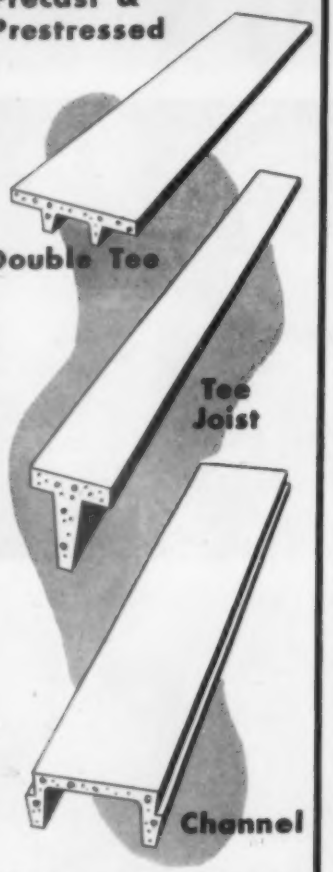

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is made *via* rail or truck from Winnfield to various road jobs, or to cement plants purchasing the gypsum.

Equipment at Plant No. 1 includes an undertrack hopper for unloading aggregate from railroad cars. Beside this hopper a below-grade truck hopper takes deliveries when brought in by truckloads. Each hopper discharges onto a short conveyor belt which takes materials to the receiving end of a 24-in. by 250-ft. Barber-Greene belt conveyor. This conveyor moves aggregates up to the top of the plant, where it discharges into a 450-ton 6-compartment Butler storage bin.

Cement comes in bulk railroad cars from the Ideal Cement Company plant located a short distance from Plant No. 2. It is unloaded from the cars (or trucks) by means of a cement screw and bucket elevator to the upper 850-bbl. cement bin or to a 1,000-bbl. storage silo. It is moved in the same manner into the cement compartment of the 3-compartment 200-ton overhead bin over the concrete pipe plant at No. 1, or into the new 600-bbl. cement storage silo at this pipe plant.

On another switch track in Plant No. 1 aggregates can be unloaded by means of a P & H Model 655 crane with clamshell bucket. Stockpiles are also built up adjacent to this point from which materials are reclaimed by the crane with a dragline to the hoppers over a cross conveyor feeding the main conveyor belt. Under the Butler 3-cu. yd. weigh batcher in the plant is a Rex 2-cu. yd. mixer. Delivery of ready-mixed concrete from this plant is by means of 15 truck-mixers, mostly 5½-cu. yd. Rex, Smith, and Challenge.

Plant No. 2, the most modern in point of equipment, has a Lima Model 805 crane with 3-cu. yd. clamshell bucket loading materials into an underground hopper from stockpiles. This hopper feeds a 24-in. by 250-ft. Barber-Greene belt conveyor carrying materials up to the 275-ton 4-compartment Butler storage bin at the top of the plant. Cement is unloaded from bulk cars by means of a cement screw and bucket elevator into the 1,000-bbl. cement storage silo, or into the 900-bbl. cement compartment of the overhead bin. Materials are proportioned through a Butler 4-cu. yd. weigh batcher into a 3-cu. yd. Smith tilting plant mixer. Eighteen truck mixers, mostly 5½-cu. yd. capacity, handle delivery of the concrete.

Plant No. 3 is a "dry" plant, without a plant mixer. Carloads of materials are unloaded into stockpiles by means of a P & H Model 255 crane with a ¾-cu. yd. bucket. Truck deliveries of aggregates and cement can be handled through an underground hopper, a screw, and a bucket elevator to the 200-ton 4-compartment Butler bin or into the 750-bbl. cement storage silo. A 5-cu. yd. weigh batcher proportions materials into the truck-mixer drums. The delivery units are mainly 5-cu. yd. Challenge truck mixers. With this setup they have produced 530 cu. yd. of concrete in an 8-hour day. Theoretical output of the Baton Rouge plants is 100 cu. yd. per hour, per plant.

At Plant No. 4 it is planned to install a Butler 250-ton aggregate bin, a 1,250-bbl. cement silo, and a 5-cu. yd. batcher for transit-mix operation. Company officials believe that 12 truck units will operate out of this plant at the outset.

At Plaquemine, La., the company operates three 5-cu. yd. truck-mixers to deliver concrete to the oil fields and sugar mills in that general area. Aggregate comes to stockpiles at the plant site by truck. A P & H Model 255 crane with ¾-cu. yd. clamshell bucket moves materials to an Erie 2-compartment 150-ton aggregate bin. Cement is taken from an underground hopper by screw and elevator up to a 400-bbl. cement bin. The two structures are connected by a catwalk. Two-stage loading (cement and aggregates separately) is used in this plant.

Anderson - Dunham ready - mixed concrete operations use 0.04 percent of Pozzolith in all concrete, to increase the value of the portland cement as regards strength, placeability, and impermeability. Butane-propane gas is used in all trucks and in some miscellaneous equipment.

Each plant has a base station in the radio setup, with mobile units installed in 68 vehicles, including all truck-mixers, executives' and salesmen's cars, and repair vehicles. In the mobile units R.C.A. Model CMV-3E4 Fleetone radio receivers are used, while the base station transmitter at each plant is an R.C.A. Model SCF-60A, operating at 43.10 megacycles frequency. This equipment affords a range of about 15 miles. This system has been installed for the last 2½ years, and company executives speak highly of the increased efficiency of service afforded by radio, as well as the substantial savings effected in truck operation.

The concrete pipe plant adjoins ready-mixed concrete plant No. 1. Pipe machines are set up in a build-

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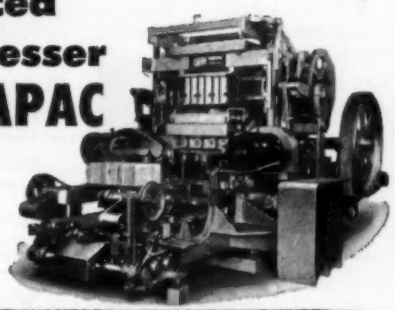

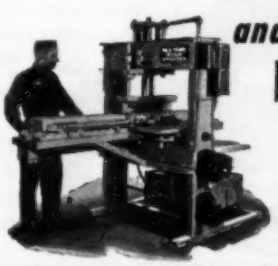

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ing 175 ft. by 250 ft. in area, located beside the track siding. Tongue-and-groove, and bell-and-spigot pipe, in diameters from 18-in. to 36-in. in 4-ft. lengths, are made here on a McCracken Model T machine. A new heavy-duty Quinn machine makes pipe in diameters from 42-in. to 84-in. in 6-ft. lengths. A Type R McCracken machine has been ordered, for making pipe from 4-in. to 15-in. diameters. Mixing concrete is done in a Besser 40-cu. ft. mixer which receives materials from an overhead 3-compartment 200-ton bin fed from an elevator and track screw. A 600-bbl. cement silo was recently installed on this sidetrack for the operation of the new pipe machine at the north end of the building.

Pipe are cured in the outside yard, a large portion of which is used to stock about 5,000 tons of the various sizes. Deliveries are made by truck, mostly Internationals with tandem Nabors trailers, to points within 150 miles of Baton Rouge. At present a fleet of seven of these trucks serves this plant.

At Plant No. 2 additional pipe is now manufactured outdoors, mostly of 72- to 84-in. diameters, by means of vibration-casting methods. The Quinn pipe forms and finished pipe are handled by means of an overhead traveling hoist suspended from a steel frame spanning the casting area. Miscellaneous equipment in connection with pipe manufacture and delivery includes two Hyster SC 180 forklift trucks, 7 tandem trailers 33 ft. in length, and three 18-ft. flat-bed trucks. The tandem trailers are powered by International RC 194 trucks with Cummins diesel engines, while the flat-beds use RC 184 chassis.

Metal culverts are made for commercial and highway uses in two Quonset-type buildings 40- by 160-ft. in size, located on an 8-acre site to the south of Plant No. 1. The operation is said to be one of the largest in this country. Three Stamco punching machines are utilized in this work. The finished products are dipped in a 36-ft. long dipping vat for an asphalt coating. Other equipment in the metal operations include an arching machine, corrugating rolls, and an overhead crane for handling the metal culverts in the shop and for loading these on trucks and cars. Four single-axle trailers having 35-ft. float beds are used for delivery to points throughout the entire state.

The company also manufactures asphaltic mixtures for roads and streets, having been in this business since 1946. A 75-t.p.h Cedarapids FA plant is used in this operation. This plant is across the road from the metal culvert plant.

Another division of the company is the Dunham Tank Company, having facilities at Minden, La., 35 miles east of Shreveport, La. This division fabricates complete oil field control equipment, such as bolted tanks, scrubbers and treaters, high- and low-pressure separators, and all types of welded tanks. About 135 men are employed at this plant, the only one of its type in the state. This operation, started in March, 1954, has offices in several adjoining states and is said to be the third-largest consumer of steel products in Louisiana.

At Lake Charles, La., Dunham-Price, Inc., another subsidiary company, manufactures concrete pipe, ready-mixed concrete, concrete block and brick, and conducts a wholesale building material business. For the ready-mix portion of the business four plants are operated, using 32 truck-mixers to deliver either dry materials transit-mixed or central-mixed from one of the plants.

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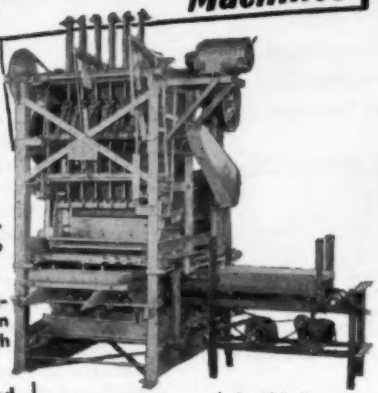

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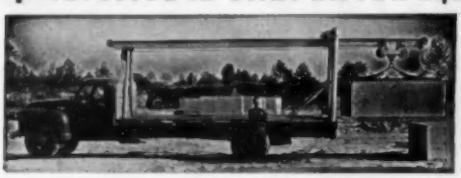

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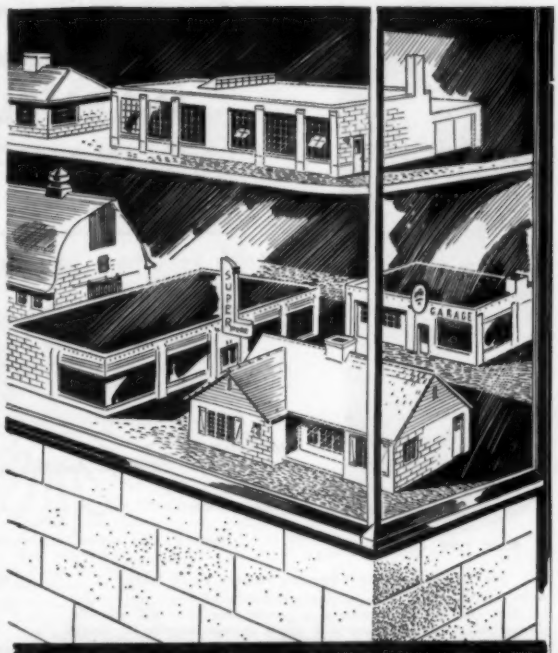

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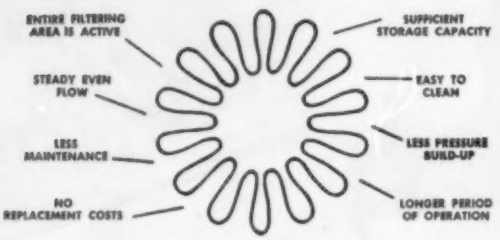

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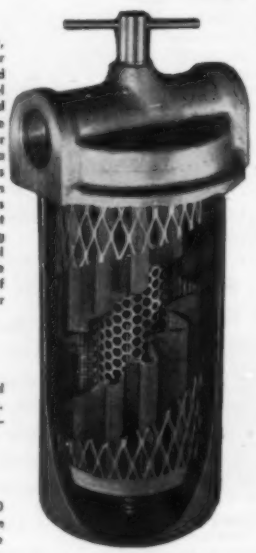

LINE TYPE (cutaway)

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crete pipe in diameters from 4 in. to 18 in. and a Tuerck-McKenzie unit turns out sections in 18-in. to 60-in. diameters. Three 32-ft.-long single-axle float trailers, powered by International RC 194 chassis, handle the delivery of concrete pipe from this plant.

Officers of Anderson - Dunham, Inc., are Ted F. Dunham, president; E. L. Peebles, vice-president and general manager; Ted F. Dunham Jr., vice-president; and K. O. Dunham, secretary-treasurer. Berlin Wall is general superintendent of the Baton Rouge operations, R. W. Daugherty is general superintendent of the Winnfield quarry, and H. E. Kirkpatrick is vice-president and is in charge of the Minden operations. Jim Anderson, an early associate of Ted Dunham in oil field operations conducted in Texas and Oklahoma, contributes the Anderson name to the company name, although the corporation is wholly owned by Mr. Dunham.

At Lake Charles, Ted Dunham is president of Dunham-Price, Inc.; Ashton Fenet is vice-president and general manager; and Mrs. Roland Price is secretary-treasurer.

NRMCA Convention

(*From page* 250)

merce, zoning boards, planning commissions, and other like groups; (4) provide promotional literature which will feature the advantages of using ready-mixed concrete in paving—this to be directed to city engineers and public works officials; (5) use advertising, sponsored by local producers, for special campaigns; (6) use radio and TV media for "spot announcements" of public service; (7) preparation (later) of motion pictures of ready-mix street paving operations; (8) develop a practical plan of inspection and quality control by local authorities, which would be the fundamental concept of the whole program.

William C. Homer Appointed President of Barnes & Cone

William C. Homer has been elected president of Barnes & Cone, Inc., Syracuse, N. Y., one of the largest producers of concrete and Haydite building blocks in eastern United States. Mr. Homer was formerly vice-president and general manager. He succeeds Glenn C. Barnes, who is now chairman of the board.

Barnes & Cone manufactures a facing block known as "Roman Rough". Last year a new lightweight (Haydite) block was developed under the name "Baucolite".

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The Cleveland Builders Supply Co.
Cleveland, Ohio

Putnam Mason Supplies, Inc.
Carmel, New York

Tait Block and Supply Company
Port Huron, Michigan

Daggett's Concrete Products
South Haven, Michigan

Fairlawn Supply and Coal Company
Akron, Ohio

Polyock Brothers
Zenda, Wisconsin

Atlas Concrete Products, Inc.
Flint, Michigan—2 units

Allen County Concrete Products
Lima, Ohio

Meekins, Inc.
Hollywood, Florida—2 units

Carl Krebs
Fort Thomas, Kentucky

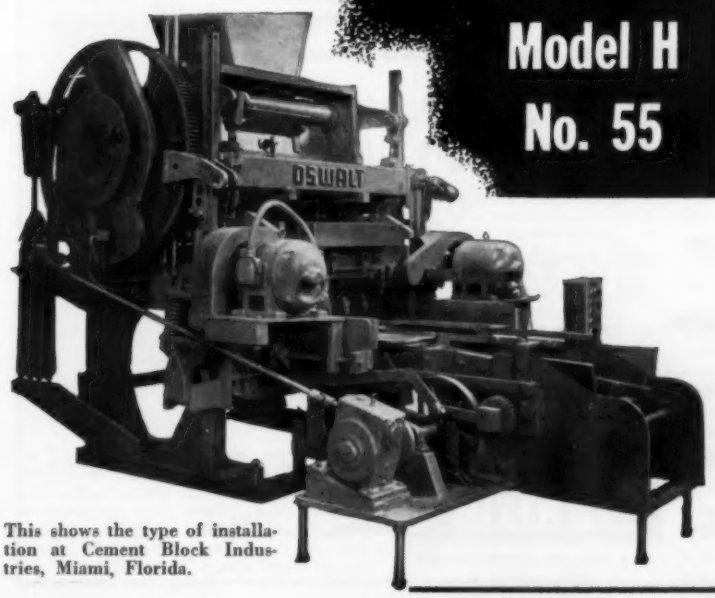
SIDE-O-MATIC UNLOADER CORP.

P. O. Box 1561, York, Pa. • Phone York 7357

Best Buy for Blockmakers

OSWALT BLOCK MACHINE

Model H No. 55



This shows the type of installation at Cement Block Industries, Miami, Florida.

TODAY'S DESIGN FOR TOMORROW'S "BLOCK PROFITS"

When business is good, it is "good Business" to invest in new and better equipment which will give maximum productivity and increase your income.

Model "H" OSWALT Block Machine includes all the latest engineering developments and operating features in a single package:—

- Improved Vibration and Production Speed-up
- Shock-Free Ejector and Front-End Pallet Feeder
- New Simplified Height and Density Control
- Extra Strength and Stability with Smooth, Relaxed Operation
- Massive Construction with full 2" Thickness, Stress-relieved Frame

You can depend on the OSWALT Block Machine for the ultimate in output without sacrifice of quality.

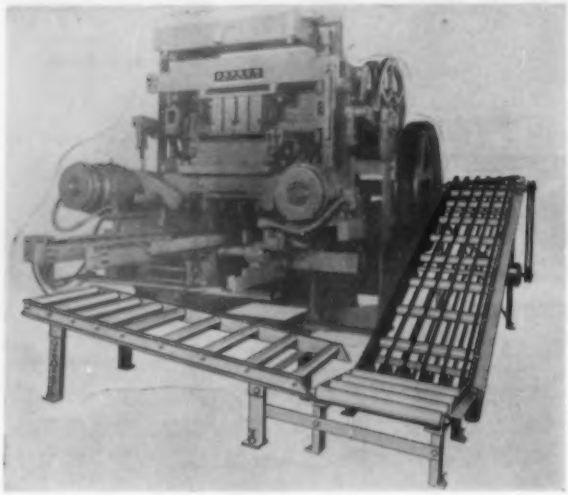
Write for new Brochure of Oswalt Block Machine

OSWALT ENGINEERING SERVICE CORPORATION

1335 Circle Avenue, Forest Park, Ill.

PHONES: ESterbrook 8-4664 (Chicago)
FOrest 6-2798 (Suburban)

CM New Machinery and Supplies



● Bergen's side pallet feeder claims the following features: low initial cost; simple operation; individual, long-life V-belt drive; variety of height positions; easy installation; quickly detachable for block machine repairs or cleaning. ← (101)

● Equipment designed for fracturing a block of green (wet) material, producing a natural faced cast building stone, is manufactured by Matson Ston-O-Fect Company. The sliding hopper moves the material into the mold box where the green material is broken. After vibrating and compaction, the wet material is ejected upward and broken into two stones with natural textured faces. ↑ (104)

● Steel platform bodies, featuring distortion-free body floor surface, fully enclosed reinforced stake pockets, and recessed stake pocket lips for tight sideboard sealing are featured in a catalog offered by Galion Allsteel Body Company. Three model series are available in the new line, each in lengths of 12 to 16 ft. All Standard 93-in. wide bodies are furnished with 10 gauge highly resistant steel floors, and with 1⅞ by 2¾-in. stake pockets. Payload capacities range from 9 to 15 tons. ↑ (102)

● A liquid-foaming chemical agent, Elastizell, a water soluble plastic agent, gives air cells in Elastizell-type lightweight concrete a coating of high tensile strength, also adding self-insulation, and moisture resistance. ↑ (103)

APRIL, 1956

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

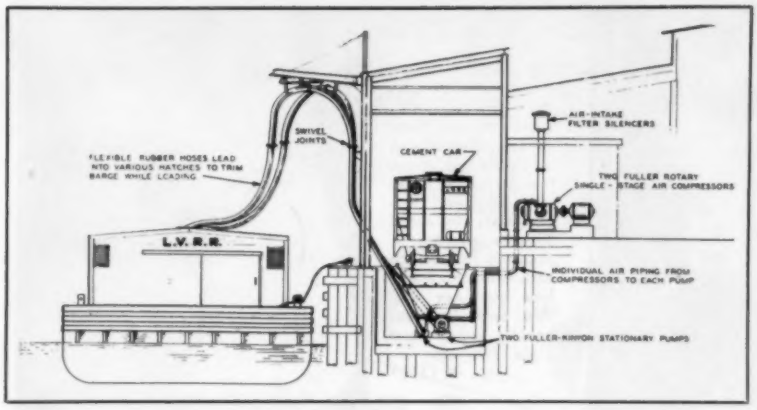
101 102 103 104 105 106 107 108 109 110
111 112 113 114 115 116 117 118

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____


FLEXIBLE RUBBER HOSES LEAD INTO VARIOUS HATCHES TO TRIM BARGE WHILE LOADING
SWIVEL JOINTS
CEMENT CAR
AIR-INTAKE FILTER SILENCERS
TWO FULLER ROTARY SINGLE-STAGE AIR COMPRESSORS
L.V.R.R.
INDIVIDUAL AIR PIPING FROM COMPRESSORS TO EACH PUMP
TWO FULLER-KINYON STATIONARY PUMPS

● The Fuller Kinyon conveying and loading system consists of two Type H stationary pumps, two 1-120 rotary single-stage multivan compressors (each with a capacity to furnish 614 c.f.m. of air at a pressure of 12 p.s.i.), and two 8-in. discharge lines. Each compressor is driven by a 40-hp. Westinghouse motor. This diagram shows the arrangement of the semi-pneumatic system installed for unloading closed hopper cars and loading cement into barges at a pier. The system will unload and transfer 400 bbl. of cement from a 70-ton car in 20 minutes. Advantages of the system are said to include greater handling speed, lower costs, and faster turn-around for cars and barges. ▲ (105)

● Motorola dynamic microphone for mobile 2-way radio has a built-in transistor amplifier. The companion dynamic speaker-microphone functions as a speaker when not being used as a microphone. It can be conveniently mounted or held near the ear to overcome noise. ▲ (108)

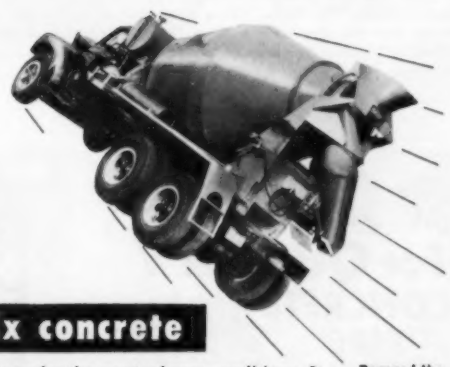
● Weighing only four ounces, the Vibrolator SAH-10 is claimed to be the lightest full-powered mechanical vibrator available. It was designed by the Martin Engineering Company for use on hoppers, feeders, molds, and packaging machines. ▲ (106)

● Diamond Tool Associates, manufacturers of diamond cutting blades, have introduced their new concrete cutting machine for use in trenching, joint cutting, and patching. Solid rubber-tired, non-sway ball-bearing wheels give perfect maneuverability, and twin mounted 14-in. capacity blade guards afford either side cutting. ▲ (107)

No — the New ROCKET will NOT fly to the moon

25th Anniversary

That's right.
And for the sake of honesty in advertising, there are other things the Rocket will not do. It will not operate satisfactorily under water; it will not quadruple your profits within 24 hours; the Rocket's rate of charge will not exceed the speed of sound. The new Rocket will **not** compete in the 1957 Olympics as a member of the interplanatory space squadron.



But it WILL mix concrete

It will mix it quickly and properly under the most adverse conditions. It will also agitate quite successfully.

Owners (of Rockets) tell us this mixer (1) requires surprisingly little maintenance, (2) has every ease-of-operation feature (at no extra cost).

We honestly believe you'll agree that the Rocket is a fine mixer at a reasonable price that will give you better-than-average performance for a long, long time. *There's a Rocket to fit every Pocket(book), too.*

Demand the Badge of Dependability

ALL THESE FEATURES *at NO EXTRA COST!*

Hydraulic Chute Control is fully automatic. Controls grouped for easy access.

Aluminum Extension Chute attaches to 36" fold-over addition to main chute. Total discharge chute: 12' 6".

Electric Revolution Counter kit included, you can handle most specifications with the Rocket!

Special Alloy, abrasion resisting steel used at all wear points.

Unobstructed Hopper, for rapid charging, no spilling or waste.

Positive Chain Drive, flexible power, not affected by truck twist, road shock.

Standard Industrial Engine, truck-type transmission. Repair parts readily available.

Three-Point Suspension, one-piece cast steel precision machined ring.

CONCRETE TRANSPORT MIXER CO.

4909 FYLER AVE., ST. LOUIS 9, MO.
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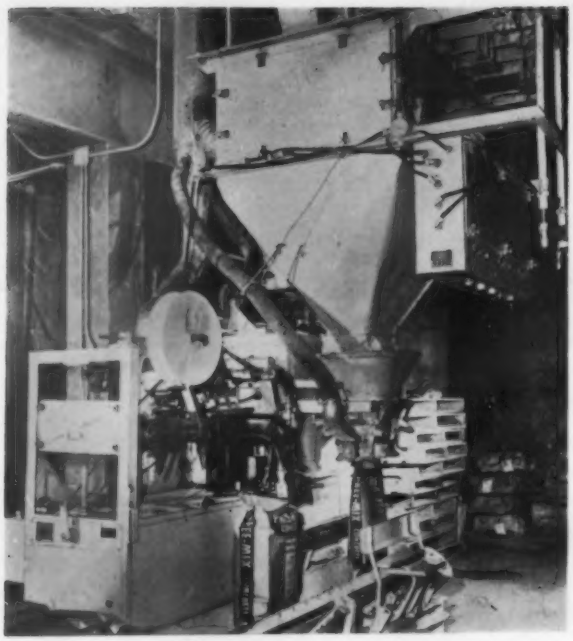
MAIL THIS COUPON TODAY!

Gentlemen: Please rush full information, prices and terms on the following:

☐ New Rocket Revolving Drum Truck Mixer
☐ Hi-Lo Stationary Drum Mixer
☐ Batching Equipment ☐ Water Meters
☐ Material Handling Equipment

CM

Name.....
Firm.....
Address.....
City..... State.....



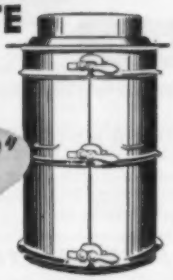
● Bemis Bro. Bag Company introduces a complete packaging unit for dry concrete products which weighs three separate ingredients simultaneously. The Packer has a three bucket scale; the buckets discharge into the bag at the same time. A fourth ingredient can be added automatically. Speeds up to six bags per minute can be obtained. ↟ (109)

● Rights to manufacture this concrete garbage disposal can be obtained from the Davidson Company. Disposal nuisances are eliminated because garbage is digested right in the unit. A brochure tells how you can add this unit to your present line of concrete products. → (111)

● Featuring finger-tip control, this power-driven box car loader shuttles in and out of cars and trucks, eliminating hand trucking. It discharges bags and packages at desired elevation at the point of final stacking. Manufactured by the Power Curve Conveyor Company, this conveying system is arranged in a series of steel spring belts operating over grooved rollers that are hinged together. ↟ (112)

CALL ON Quinn For QUALITY CONCRETE PIPE FORMS

"STANDARD" The World Over



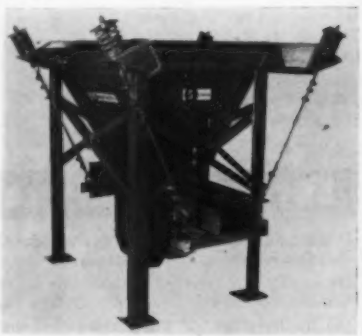
Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

Also Manufacturers of
QUINN CONCRETE PIPE MACHINES

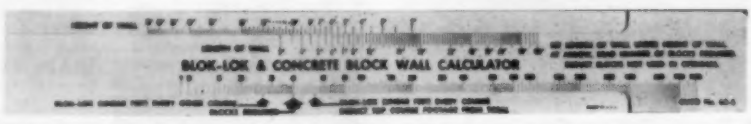
Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA



● Simplicity Os-A-Veyor feeders, developed for use in concrete batching plants, are available with replaceable liners of abrasion-resistant steel. Os-A-Veyor sizes range from 1' x 4' x 6' x 20' with capacities to 1000 tons per hour. They are self-cleaning units, will handle heavy column loads, and discharge material with a minimum fall. ↟ (110)



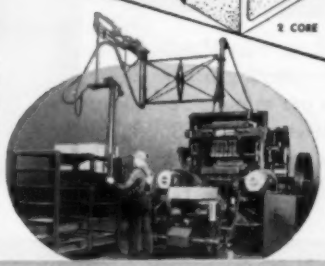
● Mary M. Hanson, president of A A Wire Products Company, has redesigned their familiar Blok-Lok calculator to determine quickly and accurately the amount of Blok-Lok machinery reinforcing and the number of concrete blocks required for a wall. With the height and length of a wall, one can easily calculate the amount of Blok-Lok required for every course or every other course. This simple, easy-to-read scale can be obtained free by writing on your company letterhead to their plant at 7211 Cottage Grove Avenue, Chicago 19, Ill. ↟ (113)

Concrete Filler Block for *Fire-Safe* FLOORS and ROOFS

Why make only the walls of a new building fire-safe and permanent? Why not also apply these practical advantages to the floors and roofs? Concrete Filler Block, produced on a Besser Vibrapac, make it possible for the ENTIRE structure to be fire-safe and permanent . . . at LOW COST.

ALL made on a BESSER VIBRAPAC

Concrete Filler Block are made on a Besser Vibrapac . . . the same dependable machine that produces high quality concrete load bearing block for walls. And the same Plain Pallets are used. All types of filler block can be made in various sizes to coordinate with other modular materials and for all load conditions. Block plant operators can materially add to their profits by supplying their customers with BOTH wall and floor units. For further facts, contact your nearby Besser representative, or write:



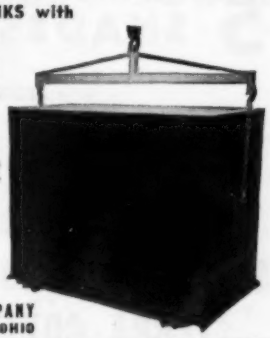
Vibrapacs are versatile. They make ALL types and sizes of block on ONE set of Plain Pallets. Fully automatic. Off-bearer removes finished block with power hoist. No manual lifting.

BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.

A 8585-½-H

FOR GREATER PROFITS — BUILD APPROVED CONCRETE SEPTIC TANKS with

NORWALK EQUIPMENT



Build rectangular concrete septic tanks that will meet the most rigid specifications of local health officers and sanitary engineers. Build them QUICKER and at LOWER COST with NORWALK septic tank molds.

Molds built to your requirements

Write for details

THE NORWALK VAULT COMPANY
Dept. CM • NORWALK, OHIO

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homeward®
Concrete STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

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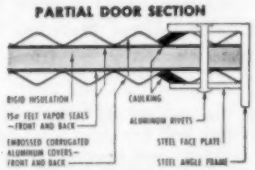
® homeward is a Registered TRADE MARK.

Above: Universal Kiln Doors, Door Carrier Equipment, and Sliding Utility Doors at Cinder Block & Material Co., Indianapolis, Ind.

PARTIAL DOOR SECTION



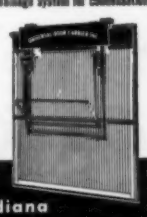
All welded and riveted assembly. Complete internal drainage system for condensation.

Kiln closure equipment is no place for tin-pan construction. Be sure the equipment *you* buy has the *guts* to give you efficient operation and long trouble-free service. Write, wire, or phone for detailed information.

Universal

KILN DOORS and DOOR CARRIERS

NEW *Uni-Seal Door Gasket and Cement—*
NEW *Uni-Coat Rust Preventive Coating*



UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

Speed Up Hand Work with the BIG BULLY Air Hammer

- Clean Equipment
- Scrape Dry Concrete
- Clean Forms

Weight only 50 oz. 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

Write for Complete Information Today

Clean Mixing Trucks Faster — *Clean Fragile Mixing Equipment Safely* — *Vibrating Concrete From Hopper*

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The H_2O Meter

MEANS CONTROLLED SLUMP PLUS CONTROLLED YIELD

1. **Instantaneous Moisture Readings IN READY MIX** Show your customers that you mean business when you talk "controlled concrete" because your batcher can now determine moisture content as easily as reading the clock.
2. **Instantaneous Moisture Readings IN BLOCK PLANTS** Permit immediate adjustment of batch weights, when moisture content changes, so that a uniform number of blocks will be produced from each batch.
3. **The Use of an H_2O Meter** makes it possible to engineer the mix to a fine point with confidence that design strength can be met without resorting to large margins of safety.

The H_2O Meter has been completely proven in the field to be accurate and trouble free, and we fully guarantee it to be so.

Base prices for single calibrations are:

$600 Installed by us— **$475** installed by the purchaser F.O.B Sarasota, Fla.

For Complete Information Contact Us

SARASOTA ENGINEERING CO., Inc.

OFFICE AND FACTORY: 2010 PINE TERRACE
P.O. BOX 1329, SARASOTA, FLORIDA

DISTRIBUTORS FOR H_2O METER
Peabory Sales, Inc., Tampa, Florida
Tool Box, Inc., Greensboro, N. C.
Concrete Controls Corp., Wheaton, Illinois

NATIONAL READY MIXED CONCRETE ASSOCIATION NRMCA

5 SHADES from 1 PIGMENT for CONCRETE PRODUCTS

SYNTHETIC IRON OXIDE RED TERRA COTTA NO. 161

SHADE	PIGMENT	LBS. PER BAG OF CEMENT
Buff	No. 161	½ lb.
Suntan	No. 161	¾ lb.
Coral	No. 161	1 lb.
Salmon	No. 161	1½ lbs.
Terra Cotta	No. 161	2 lbs.

Write us or our nearest representative for working samples and more detailed information

FRANK D. DAVIS COMPANY

2704 Santa Fe Ave.
Los Angeles 58, Calif.

P.O. Box 292
Meadow Road
Nixon, New Jersey

New Literature

Clues to better handling methods are presented in the latest issue of *Handling Materials Illustrated,* a publication of the *Towmotor Corporation.* Articles include a description of an all-weather stockpiling operation involving specially equipped fork lift trucks, and an illustrated series of materials handling case histories. Three sections of interest to prospective purchasers of materials handling equipment are featured. **(114)**

Advantages of using 2-way radio in the ready-mix concrete industry are discussed in the new booklet offered by *Radio Corporation of America.* They are increased efficiency, increased production, reduced overtime, and lower operating costs. The booklet outlines the principal features of RCA equipment specially designed for this industry, and describes their 4-point protection program which includes nationwide service by RCA's own technicians. Free surveys are offered to ready-mix producers interested in RCA mobile communications equipment. **(115)**

Concrete gunning equipment manufactured by the *Air Placement Equipment Company* is featured in a new complete line catalog now available. Specifications and operating capacities are given for each piece of equipment, in addition to answers to typical questions about air placed or gunned concrete. Application photographs are included. The new Airplaco portable gunning rig is described fully. **(116)**

Mass production of uniformly accurate prestressed concrete castings has been facilitated through the development of the FORM-CRETE system by *Food Machinery and Chemical Corporation.* Available in all practical sizes, lengths, and gauges to meet modern construction requirements, Form-Crete steel forms will fit into any existing plant with a minimum of alteration and installation costs. **(117)**

Econocrete, a product developed for use in cement for concrete blocks, cinder blocks, and general concrete production, is said to reduce cement requirements by one-third. Manufactured by the *Econocrete Corporation,* it strengthens concrete mixtures and mortars, seals settlement cracks, resists heat and cold, aids in moisture-proofing of tile, cement, and stucco, and reduces shrinkage and expansion. **(118)**

USED CONCRETE MIXER SALE

PRICED RIGHT TO SELL!

4—1952 Ford F8 Cook Brothers Tandem 5 yard Challenge	$4,000.00
2—1951 Ford F8 Cook Brothers Tandem 5 yard Challenge	$3,300.00
2—1950 Ford F8 Cook Brothers Tandem 5 yard Challenge	$2,700.00
1—LF 190 International Tandem 1950 4 yard Challenge	$2,400.00
2—KB8F International Tandem 1948 3 yard Rex	$1,400.00
1—KB8F International Tandem 1948 3 yard Jaeger	$1,400.00
2—1954 5 yard Challenge Mixer	$3,100.00
2—1948 3 yard Jaeger Mixer—model B	$ 250.00
1—1948 3 yard Smith Mixer	$ 250.00
1—1948 3 yard Ransomne Mixer	$ 250.00
1—84ST Smith Stationary Tilting Mixer #57625, 40 HP Electric Motor with Rear Batch Hopper	$7,000.00

1—3 yard Ransomne 1950	$ 450.00
6—3 yard Smith 1948 and 1949	$ 500.00
1—4 yard Smith 1949	$ 650.00
9—3 yard Jaeger model B 1948 and 1949	$ 450.00
2—2 yard Jaeger 1949	$ 175.00
2—3 yard Hi-Low 1950	$ 450.00
5—3 yard Blaw Knox 1950	$ 600.00

1—CS Johnson Concrete Batch Plant, Octo Bin, 5 Compartment, 1 Cement Compartment total 314 Cubic Yds. 2 Koehring Tilting Mixers Equipped with 75 HP Electric Motor 440 AC Volt, Air Entraining Agent Pump with 3 HP Motor, Schramm model 210 Air Compressor, 206 CFM with 50 HP Motor, Complete automatic Batching and Recording Equipment with Wet Batch Hopper, Cement Silo, steel, Bolted, Capacity 2,708 bbl, 46′ by 20′ DIA., Under Track Hopper Capacity 50 bbl, Screw Conveyor 31′, Bucket Elevator, Belt Conveyor 36″ x 407′ Complete with Belt, Framing, Walk Way etc., 75 HP Belt Conveyor (Reclaiming) 36″ x 300′ 20 HP, 2 Behlen Heaters with Blowers w/10 HP Motors for Aggregate Heating, offering made subject to prior sale FOB location on cars. $65,000.00

2—Bucyrus-Erie 38B Combination Crane, Clam Drag Line, Independent Boom Hoist, Cat 13,000 Engine $30,000.00

We Invite Your Inspection Write - Wire - or Call

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Concrete Manufacturer Classified Section

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Complete Ready-Mix Plant

Western Illinois town—Population 6,000. 14,000 yards annually. 5 years old. Latest type bins—Bulk Cement. 4 Mixers like new. Complete Block Plant. Total set-up is winterized. New Buildings. Office and Warehouse. Reason for selling—other interests.

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431 S. Dearborn St. Chicago 5, Ill.

STATE DISTRIBUTORS WANTED

Econocrete—when used in the manufacture of concrete block or other concrete units—reduces cement requirements by one-third.

Econocrete strengthens concrete mixtures, reduces shrinkage and expansion, improves fire resistance, seals settlement cracks, and aids in moisture-proofing of tile, cement, stucco, etc.

This product is patented.

Write for additional information.

Econocrete Corporation
245 5th Ave. - Room 210
New York, N. Y.

WILL BUY

Going concrete pipe business. Will consider either single or multiple plant operation. All replies in strict confidence.

Box CM-3042, c/o THE CONCRETE MANUFACTURER
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Introducing the DAVIDSON LIFETIME CONCRETE GARBAGE DISPOSAL unit. This revolutionary money maker sells on sight, and when it's in, all the neighbors want one! Completely eliminates garbage men, cans, odors, flies, animal nuisance, etc. Write immediately for details and exclusive franchise.

DAVIDSON WILTON, N. H.

Plant Design Layout Machinery Block

WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY

Specialists in Concrete Products Equipment

Eastern Representatives of the
COLUMBIA MACHINE WORKS, Vancouver, Washington

Elevators Bins Conveyors Feeders

Pumice Block Plant, established 14 years, good gross with high net, only one in trade area of 50,000. Located in one of the best booming towns in entire state of Wyoming. Definitely priced to sell. Information and free photos mailed, no obligation whatsoever on your part. **C-5350 Continental, 804 Grand, Kansas City, Mo.**

FOREIGN CEMENT

Available in any quantity

Walton Steel Company
1200 W. Ninth Street
Cleveland, Ohio
Main 1 2945

DIRECT MILL REPRESENTATIVES

WANTED URGENTLY

Dunbrik machine pallets and racks. Condition no objection. Extra racks also required.

NATIONAL MASONRY CO., LTD.
Rexdale P. O. • Ontario, Canada

FOR SALE

2 block Lith-I-Bar machines with 4", 6", 8", 12" chimney block attachments.
2,000 plain pallets.

SOUTHWEST CEMENT BLOCK
3973 W. Columbus Ave., Chicago 29, Ill.
REliance 5-1433

FOR SALE

1 Van-U-Matic, plain pallet, two blocks at one time machine. Complete with attachments.
2 mold boxes
8" cores and press heads
12" cores and press heads
4" cores and press heads
4" solid cores and press heads
6" solid cores and press heads
8 x 8" chimney cores and press heads
800 pallets
30 racks
1 12 cubic foot mixer
1 belt conveyor, 30 ft.

MAZUR BLOCK COMPANY
Wauregan, Conn.
Phone: Moosup LOgan 4-2060

CONCRETE TILE PLANT

2 Dunn Champions 4" to 12", Automatic Feeders, Large Mixer, Road Tile Castings to 24", Welders. Value $35,000.00. Make Offer: Cash—Contract—Trade.
Separate 2 large oil heating burners.

W. B. SHUMWAY, SR.
Bascom, Ohio

BY PLANE, TRAIN AND TRUCK

Replacement parts for concrete pipe making machines are moving off our shelves to all parts of the country. From North Carolina to Arizona, from Michigan to Mississippi, pipe makers are enjoying the economies and process benefits of our products. Our customers represent most of the important factors in the industry. Packers wings, tamper shoes, mixer blades of a special long-wearing alloy are but a few of the several hundred items listed in our new catalog. Write for it today and ask about our money-back guarantee and our unusual freight allowance. You'll be glad you did.

CON-PIPE DIVISION—
TEXALOY FOUNDRY CO.
1407 HOEFGEN AVE.
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PLAIN STEEL PALLETS

Guaranteed Quality
Flat • Square • Accurate

GARY STEEL SUPPLY COMPANY
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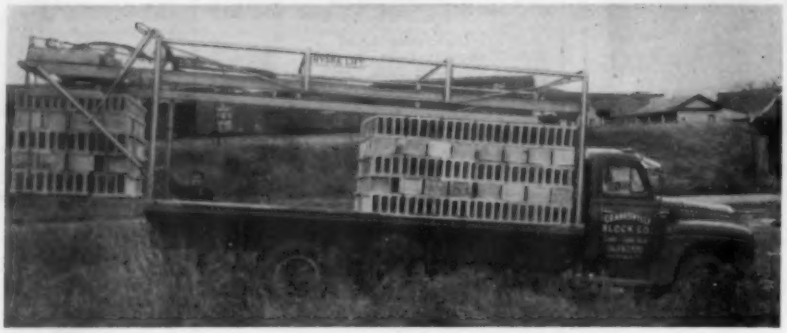

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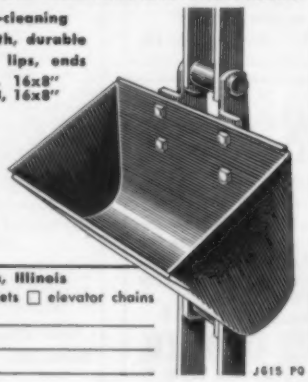

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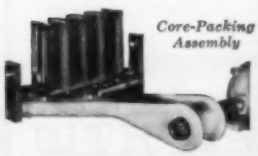
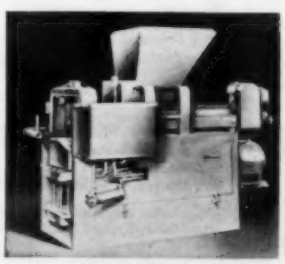


Core-Packing Assembly



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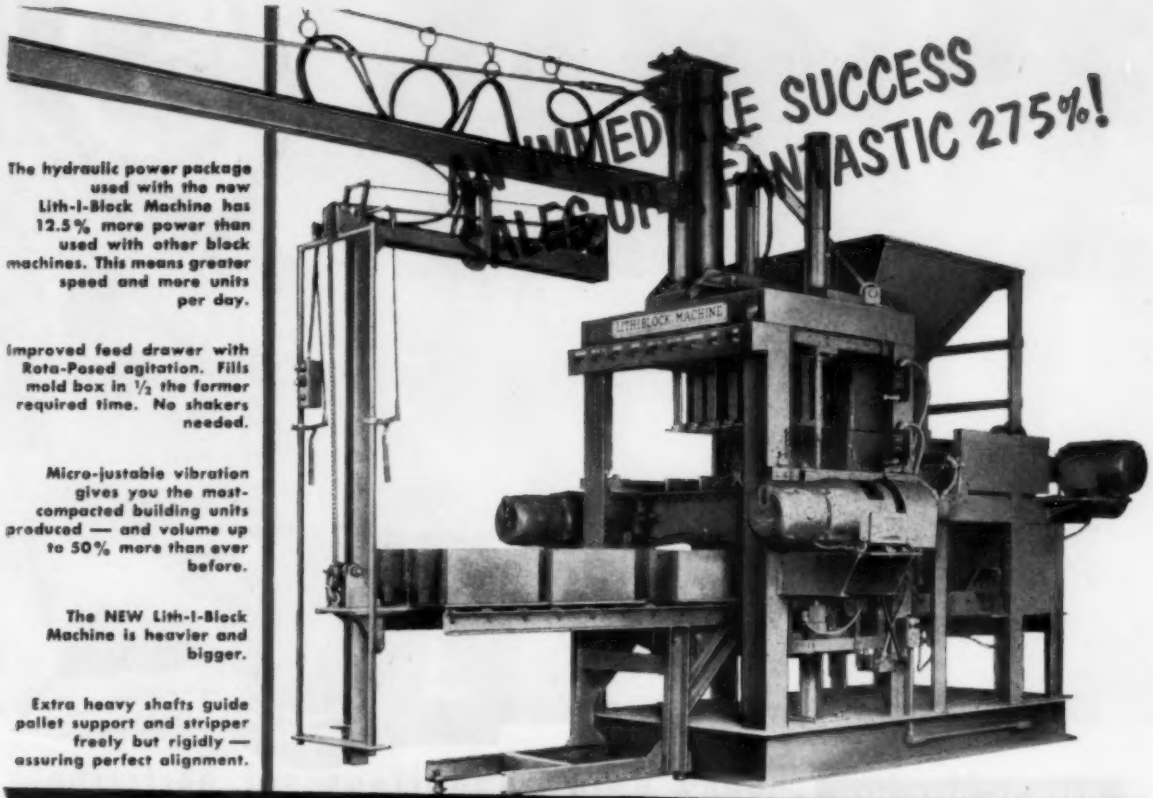

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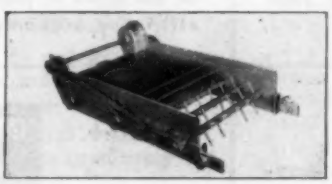

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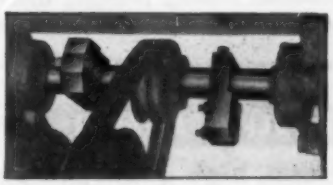

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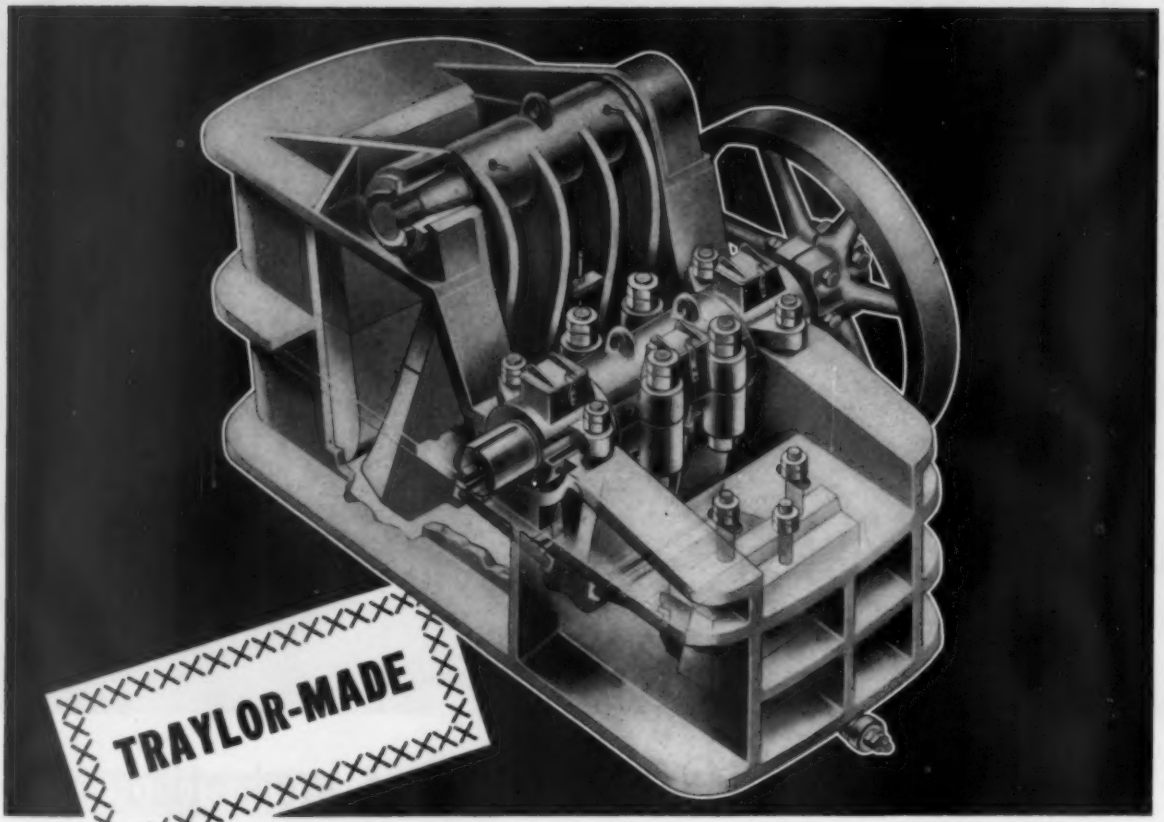

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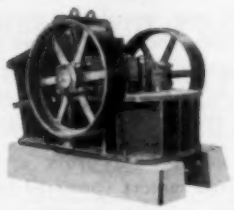

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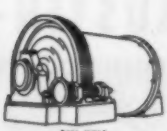
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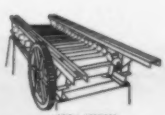
JAW CRUSHERS


APRON FEEDERS

We broke these truck axles in the lab...

In the INTERNATIONAL Engineering Laboratory, axle shafts are tested by twisting them back and forth—hundreds of times—at stress points far beyond those of any normal truck operation. Axle shafts are approved for manufacture only when they withstand a prescribed high number of twists. Production line axle shafts must conform to the quality standards set up by this rigid test.

to save you the BIG money!

Pictured above is a group of once fine and costly INTERNATIONAL axle shafts that have been purposely twisted and broken. This is done to make sure your INTERNATIONAL rear axle will last longer and save you the BIG money—the over-the-years operation and maintenance money.

This rigorous axle-twist test is but one of many operations in the chain of INTERNATIONAL engineering that makes INTERNATIONALS *all-truck*. There are no passenger car compromises *anywhere* in INTERNATIONAL design, no passenger car engines or components asked to do a truck job.

And beyond this big plus of all-truck design, INTERNATIONAL gives you functional, practical, money-saving styling—extra comfortable driver-saving cabs—every modern driving feature.

If you use a truck to make money, see your INTERNATIONAL Dealer or Branch and start saving the BIG money!

INTERNATIONAL HARVESTER COMPANY · CHICAGO

There are trucks for every mining and quarry hauling job, in the world's most complete line. GVW ratings from 4,200 lbs. to 90,000 lbs.—conventional and COE, 4-wheel and 6-wheel, four-wheel-drive models—in thousands of variations for exact job specialization.

INTERNATIONAL® TRUCKS

All-Truck Built to save you the BIG money!

Motor Trucks • Crawler Tractors • Industrial Power
McCormick® Farm Equipment and Farmall® Tractors

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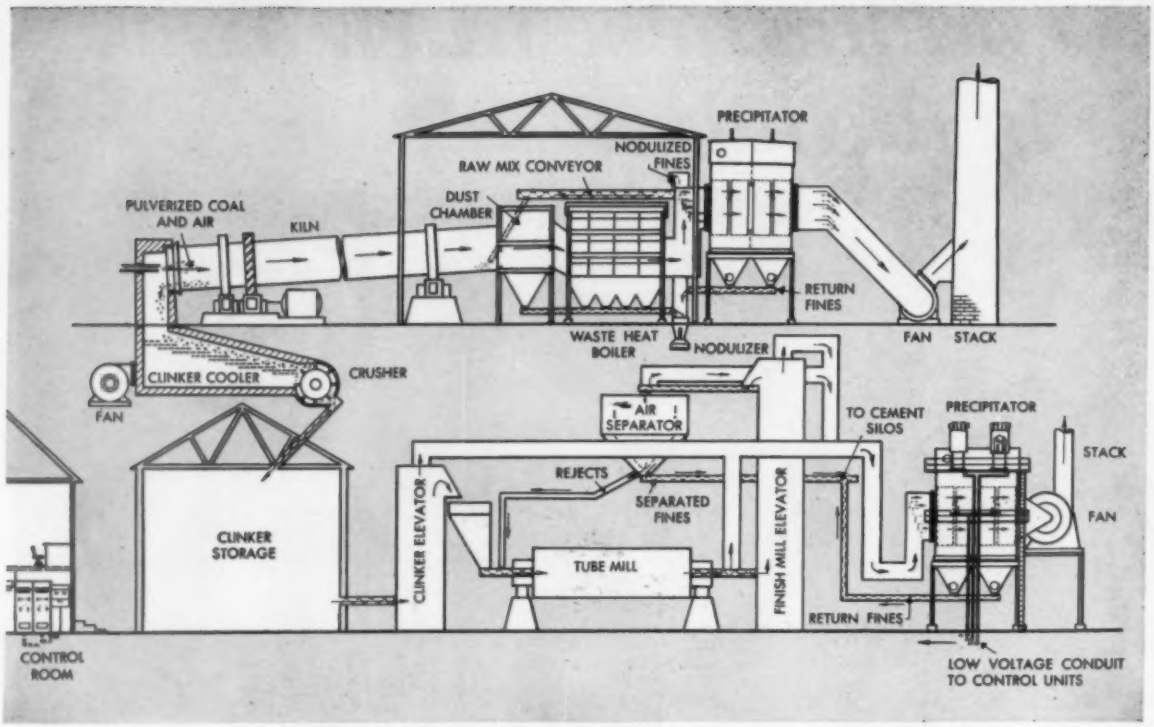


How dust collecting problems are handled in the modern cement plant

The "why" of the Cottrell precipitator is well known to cement plant personnel—its use in nuisance abatement and cement dust salvage is well established. These diagrams explain the "how" of the Cottrell, including its familiar application to kiln gas and, more recently, its use in the ventilating system of the finishing mill.

Kiln Gas

The upper half of the drawing shows a Cottrell for cleaning kiln gases. They are first passed through a dust chamber to the waste heat boiler and from there to the electrical precipitator, where the dust is removed. Salvaged dust is returned by conveyor to the process. The cleaned gas is discharged to the atmosphere through an induced draft fan and the stack. (Wet process kilns may also be fitted with Cottrells).

And In The Finish Mill

Dust from the grinding mills has always been a major problem. The lower half of the diagram shows the recent application of the Cottrell for cleaning finish mill ventilating system gases. Cement dust is collected from the ventilating system serving the separators, conveyors and elevators. As before, recovered dust is returned to the process.

Separating Small From Large Particles

When large particles of low alkali content must be separated from very small particles of high alkali content, an integrated mechanical-electrical precipitator will do the job effectively. The mechanical element handles large particles, and the electrical element collects the smaller particles that escape it.

Rapping Puffs Eliminated

With Research-Cottrell's electronically controlled Magnetic Impulse Rappers, there is no need for rapping shutdown periods or dampers. Automatically controlled and operated, the MI Rappers continuously rap the electrodes throughout precipitator operation, thus avoiding dust re-entrainment in the gas stream and assuring optimum precipitator performance at all times.

Many Design Advances

The MI Rapper is one example of many improvements that have taken place in the design of precipitators and their associated electrical equipment. Forty years of experience have provided Research-Cottrell with a rich store of engineering skill—it is this skill that has evolved the modern Cottrell precipitator, embodying a design based on knowledge gained through more than 2000 precipitators in many different fields. Fourteen of these have been installed or are under construction for cement plants. All of these precipitators were custom-engineered to individual specifications.

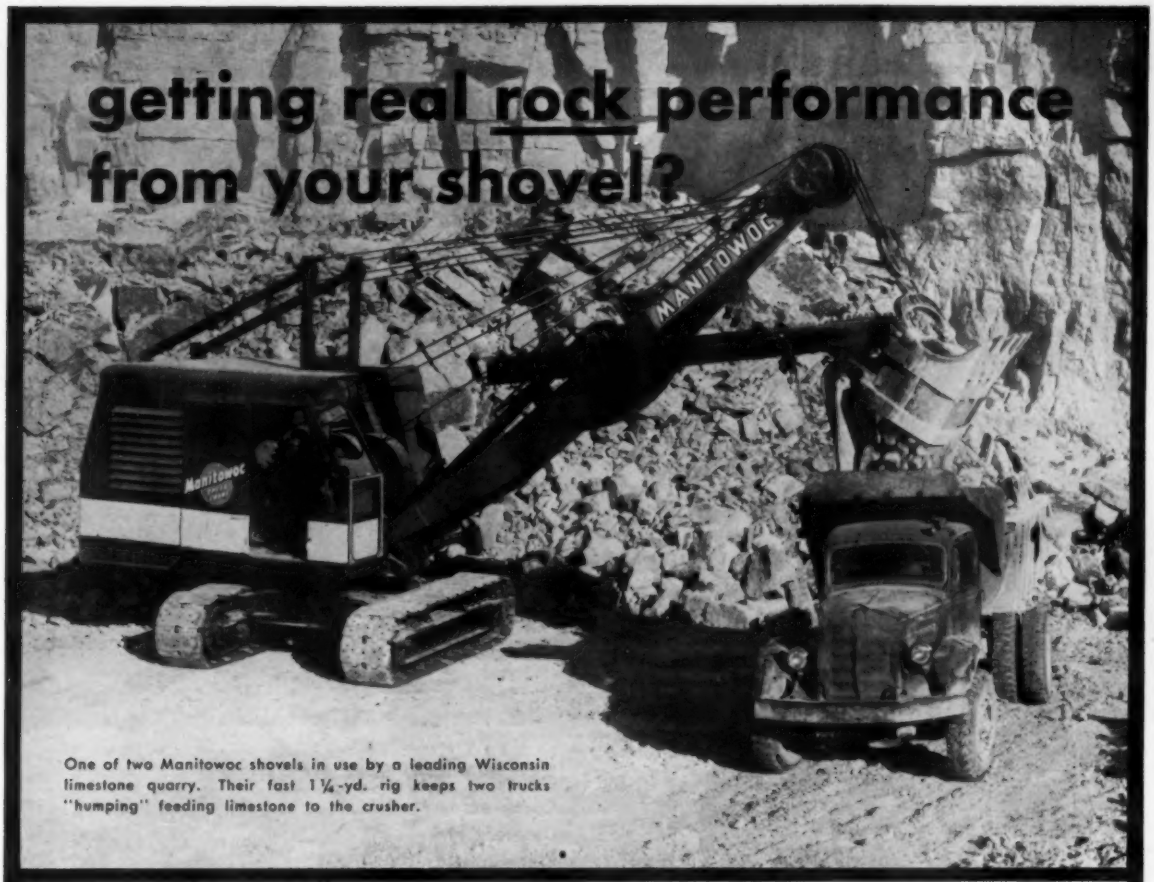
For a more complete description of the Cottrell precipitator, write to Research-Cottrell for Bulletin GB.

RESEARCH-COTTRELL, INC.

A Wholly Owned Subsidiary Of Research Corporation

MAIN OFFICE AND PLANT: BOUND BROOK, N. J.

405 Lexington Ave., New York 17, N. Y. Grant Building, Pittsburgh 19, Pa. • 228 N. La Salle St., Chicago 1, Ill. • 111 Sutter Bldg., San Francisco 4, Cal.



One of two Manitowoc shovels in use by a leading Wisconsin limestone quarry. Their fast 1¼-yd. rig keeps two trucks "humping" feeding limestone to the crusher.

Switch to Manitowoc for a True Quarry Machine

For digging and loading rock, there's nothing better than this tough, fast Manitowoc 2000. Operators of quarries everywhere report that tonnage totals jump when a husky model 2000 shovel digs in! Here's where rugged construction, faster cycles, smoother operation and less downtime mean substantial increases in production and profits.

Rugged Construction To get a real rock digging shovel, you need features like a reinforced boom and sticks; a hefty 85,000 lb. machine . . . heaviest in its class; under-drive sticks to reduce friction — save power; independent chain crowd to assure a longer wearing, positive crowd.

Faster Cycles Simplicity of design speeds digging and loading cycles . . . makes full use of available horsepower. There's a minimum number of gears and pinions, with only working gears turning; exclusive slide pinion arrangement uses only one set of clutches to drive travel, swing and boom hoist; balanced working speeds keep power at the dipper.

Smoother Operation Power is shifted smoothly and simply without jaw clutches or complicated controls. Swing and travel clutches are dependable disc-type, as easily adjustable as automobile clutches. Simple gear train transmits power smoothly, economically. Optional torque converter and air controls eliminate operator fatigue for a full shift's work every day.

See Your Manitowoc Distributor

Get all the facts on the complete Manitowoc line— 1-yd. to 5½-yds. — quickly convertible to dragline and clamshell operation.

MANITOWOC ENGINEERING CORP.
MANITOWOC, WIS.

MANITOWOC
SHOVELS 1-5½ YD. Speed Crane CRANES 20-100 TON

Gardner-Denver . . . Serving the World's

NEW super portable

ROTARY 900 SPECIFICATIONS:

Compressor Model	RP900DA
Delivery, cfm	900
Operating Pressure, psi	100
Control	New Simplified Thriftmeter
Length	13′ 9″
Width	6′ 9″
Height	8′ 5″
Turning Radius	18′
Weight, dry	12,790 lb.

Gardner-Denver Rotary 900

Gives you—Extra air capacity for bigger drills or more of 'em—without additional engines and equipment to care for. For heavy rock cuts, for quarries, for open pit mines—wherever compressed air in volume can help speed the work.

Plus—all the outstanding Gardner-Denver features which have made the Gardner-Denver Rotary 600 so popular among users. Clutch for easy cold-weather starting. Circulating water system for warming up the compressor before it turns over. Water-cooling for steady running in any weather. Super-simplicity for complete inspection, easy field maintenance.

GARDNER-DENVER Since 1859 K KELLER TOOLS

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THE QUALITY LEADER IN COMPRESSORS, PUMPS, ROCK DRILLS AND AIR TOOLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

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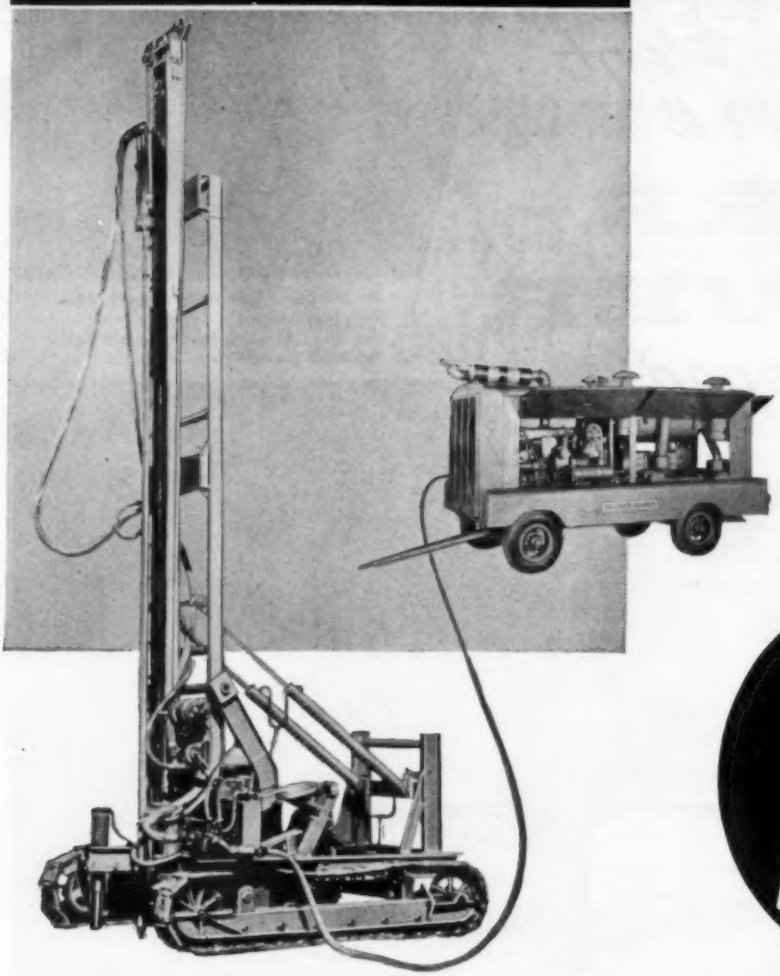
Basic Industries



DH143 SPECIFICATIONS:

Hammer Diameter	5½"
Drill Rod Size	1⅞" hex.
Approximate Weight, complete crawler-mounted drill	10,500 lb.
Rod Change, up to	20'
Height, Mast at Vertical	29'
Length	11'
Width	8½'

NEW *super* rock drill

Gardner-Denver 5½" DH143

Gives you—an entirely new rock drill class for heavy-duty rock work in pits, in quarries, in open cuts. Now you can select the proper bit size and plan the proper hole spacing for best breakage in any ground. Simplified operation—all controls are conveniently mounted at the operator's station.

Plus—The dependability, economy and hole-cleaning ability which have made Gardner-Denver Rock Drills famous wherever rock work is encountered. Available with a new Gardner-Denver air-powered crawler, or for mounting on your own heavy diesel tractor. Send for the facts today!

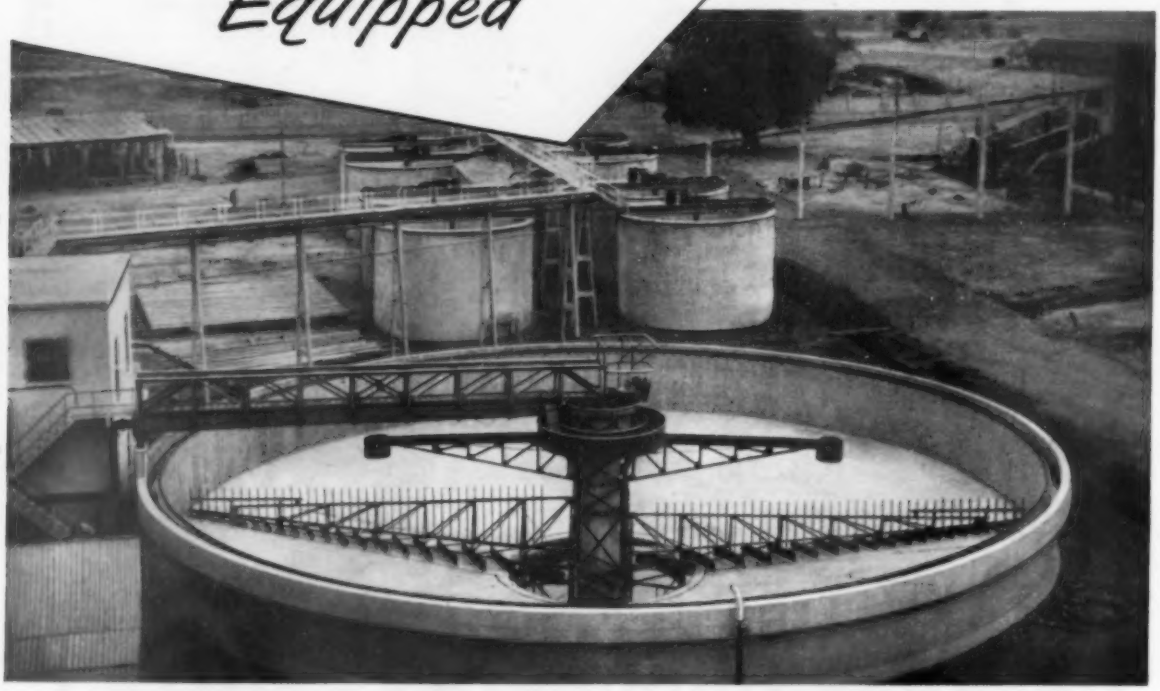
There's a Gardner-Denver distributor in your area—
see him for details

Newest Cement Plant in Asia is

DORR-OLIVER

Equipped

▲ Two Dorrco Type W Pumps installed for Slurry handling.
One Dorr Thickener in foreground with eight ▼ Slurry Mixers in rear.



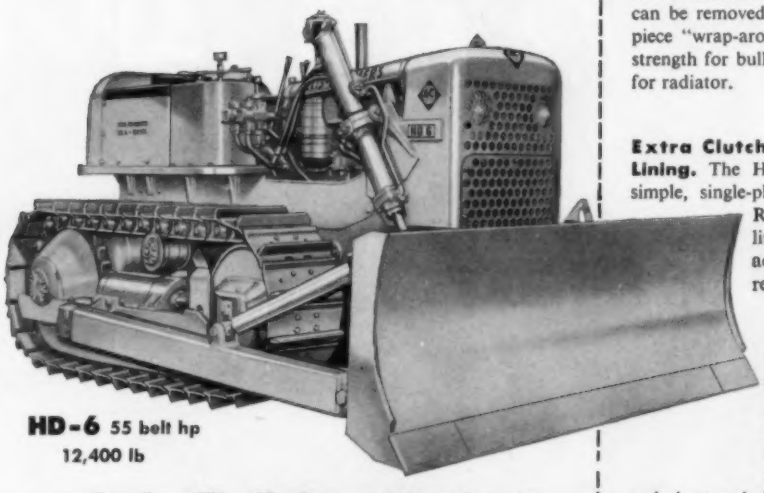
The new United Provinces Government Cement Factory, which was put into operation in 1954, is the first closed-circuit grinding plant in India and the newest plant in Asia with a capacity of 3500 barrels per day.

The standard wet process flowsheet is employed using two Dorr Classifiers, eight Dorr Slurry Mixers and two 100 ft. dia. Dorr Thickeners. Three Dorrco Type W pumps and twelve A. C. Wilfley & Sons pumps handle the wet materials. Most of the equipment was supplied by Dorr-Oliver, Ltd., London.

For equipment that will serve you year after year without high maintenance costs, it will pay you to get in touch with Dorr-Oliver Incorporated, Stamford, Conn.; or in Canada, 26 St. Clair Ave. East, Toronto 5.

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

This kind of Crawler Tractor Design gives you extra output



HD-6 55 belt hp
12,400 lb

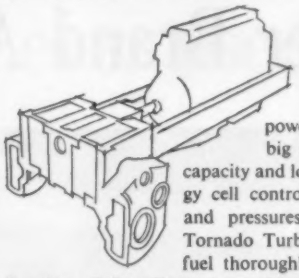
. . . and only Allis-Chalmers HD-6 has it—

advanced design features that combine big performance, versatility, dependability and simplified servicing!

Look at the Allis-Chalmers HD-6—you can see its functional design . . . how it's built to give sure-footed traction, better working balance. But there's more to this crawler tractor than meets the eye—the performance advantages of Allis-Chalmers advanced basic design. It provides more working power, more strength in all components, more working weight where it's needed . . . makes the HD-6 an outstanding performer with drawn or mounted equipment . . . easier to operate and maintain.

Let your Allis-Chalmers dealer show you how the HD-6 can give you that *extra* output on your jobs.

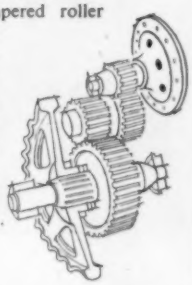
ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN



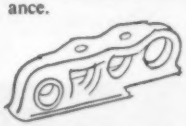
Allis-Chalmers Heavy-Duty Diesel Engine. The HD-6 power plant is designed for big output, ample reserve capacity and low maintenance. Energy cell controls combustion timing and pressures for high efficiency. Tornado Turbulence mixes air and fuel thoroughly for more complete burning. Follow-Through combustion sustains effective working pressures to take advantage of better crankshaft leverage.

Special Strength and Protection. Exclusive all-steel box-A main frame makes possible superior over-all balance, better equipment mounting . . . plus service simplicity of unit construction. Major assemblies like engine and clutch can be removed without disturbing adjacent parts. One-piece "wrap-around" radiator guard provides maximum strength for bulldozer mounting . . . complete protection for radiator.

Extra Clutch Life—with Ceramic Lining. The HD-6 master clutch offers simple, single-plate, over-center design. Revolutionary new ceramic button clutch lining keeps clutch operating longer between adjustments . . . lengthens clutch life . . . reduces lever pull for easier operation.



Straddle-Mounted Final Drive Gears. Tapered roller bearings support both ends of the final drive gear shafts. Smaller gears and shorter shafts (plus line-bored, one-piece case), provide better bearing and gear alignment, more strength, longer life. Double-reduction final drives provide greater ground clearance.



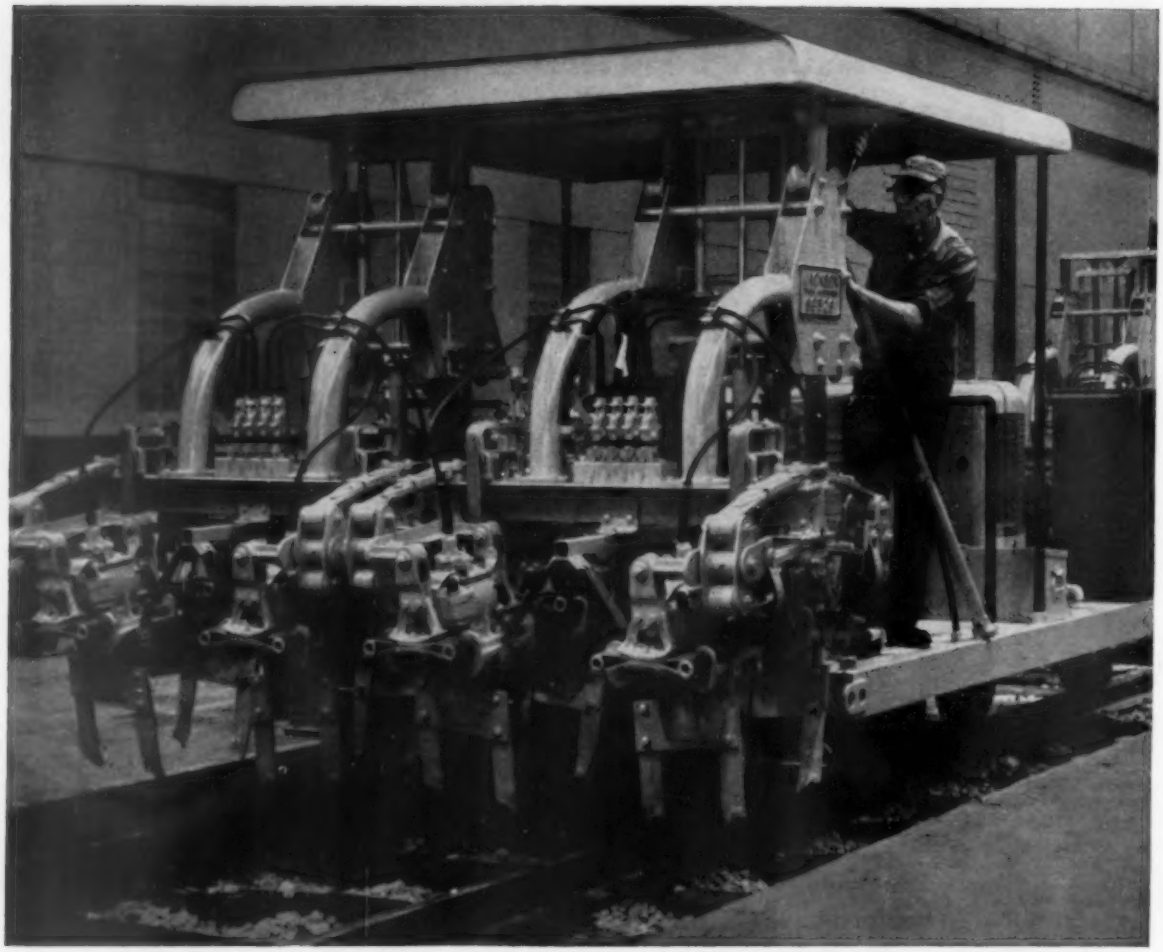
New-Design, Heavy-Duty Track. HD-6 track provides long life under the toughest conditions. HD-6 sidebars have more steel where it's needed . . . benefit from new heat-treating methods which make possible new standards of strength and hardness throughout for extra wearability.

Other Outstanding HD-6 Features

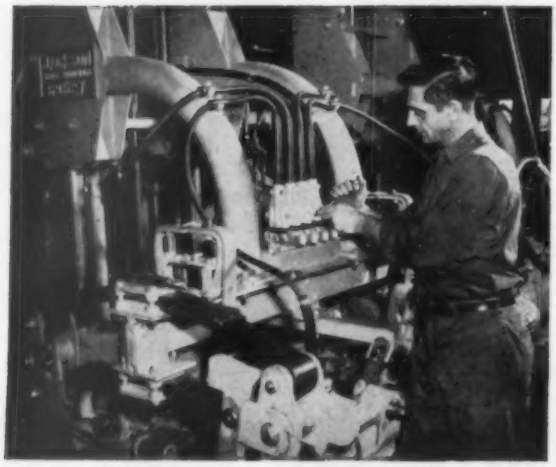
. . . no other tractor in this size class has them—at no extra cost you get roller bearing truck wheels, idlers and support rollers; 1,000-hour lubrication intervals for truck wheels, idlers and support rollers; 24-volt direct electric starting; crankcase guard; bumper; and lights.

ALLIS-CHALMERS

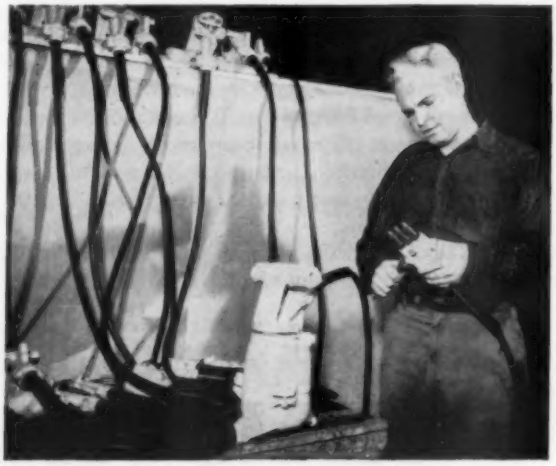
"Tiger Brand Amerclad is the most



The completely self-contained Jackson Track Maintainer.



Tightening connectors. Machine delivers 4500, 2-ton blows per minute.



Assembling leads. Each vibrator delivers ¾ ton blow.

durable cable we've ever used"

says **ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Michigan**

MANY years ago, the executives at Electric Tamper & Equipment Co. found out that when railroads order a piece of machinery, they expect it to last a long time—without breakdowns. Since then, Electric Tamper has won a high place in industry by producing a line of the hardest-working, *toughest* track maintenance machines on the market.

Leader of the line is the Jackson Track Maintainer, used for tamping ties. It has 8 powerful vibratory motors that drive 8 tamping assemblies. Each motor is powered with Tiger Brand Amerclad cable. The vibration and flexing (which are very severe) caused previous cable to crack until the jackets actually peeled away from the conductors. So they asked American Steel & Wire for advice.

Tiger Brand Amerclad was the solution. Finely stranded conductors soak up vibration and allow greater flexibility than ever before. The tough, well-cured jackets are impervious to oil, grease and the burning sun.

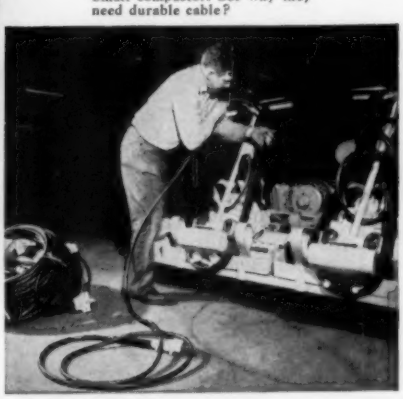
In the company's own words, "Tiger Brand cable is certainly superior to anything we have ever seen for this class of service. Its complete dependability under all service conditions has definitely helped us to maintain our good reputation in the field."

Do you want a *better* electrical cable—engineered for your equipment? Just call your American Steel & Wire representative.

The Jackson Multiple Compactor for consolidation of granular soil.

Hand Vibrospade. Cable usually drags on the ground.

Small compactor. See why they need durable cable?



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FASTER CYCLES WITH NON-STOP DUMPING

"On - the - go" dumping and high speeds clip cycle time, provide more economical one-way traffic, increase production. Exclusive Athey stabilizing jacks in the PD20 Side Dump Trailer assure built-in safety while dumping. Fills are compacted with big tires . . . material is evenly distributed. Matched in design and performance, the PD20 is built specifically for the Cat DW20 Tractor.

Athey MONEY MAKERS

BIG ADVANTAGES IN TRACTOR-TRAILER MANEUVERABILITY

The maneuverability of the Athey PR21 Trailer teamed with the Cat DW21 Tractor means faster cycles, higher production and bigger profits. Articulated "universal joint" design of all Athey-Cat hauling units gives maneuverability impossible in rigid frame trucks. With the Athey PR21, shown here, you get under the shovel quicker, work faster in tight, narrow quarters, take sharper turns at higher, safer speeds and get in . . . dump . . . and get off the fill or grizzly in shorter time.

EY MAKERS

Bigger QUARRY Profits!

SPEED AND BIG PAYLOAD FOR LONG HAULS

High speed, universal joint design and 31-ton capacity make the PR20 Rear Dump Trailer a real money maker. Especially designed for jobs that require a big capacity unit on long hauls, the PR20 has power and traction to get unit into high speed quickly, make sharp turns safely and maneuver into dumping position with minimum shifting and turning. Maintenance problems are minimized because of simple, rugged, all-welded, no-frame design.

Athey MONEY MAKERS

FASTER LOADING, LESS SPOTTING TIME

Patented, full-floating feeder of the Athey 125 HiLoader digs into stockpile or windrow, loads wide variety of material. Swiveling conveyor loads trucks at left, right or behind . . . saves spotting time, cuts delays. Loads 10 cubic yards of material per minute. Moldboard, full-floating feeder and swiveling conveyor are hydraulically controlled from driver's seat for faster all-around operation.

Athey MONEY MAKERS

ATHEY PRODUCTS CORPORATION, 5631 West 65th Street, Chicago 38, Illinois

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MAN UNDER 45 YEARS OF AGE QUALIFIED TO OPERATE A BATTERY OF VERTICAL KILNS FIRED BY NATURAL GAS. PLANT LOCATED IN EASTERN SECTION OF UNITED STATES. STATE QUALIFICATIONS IN REPLY. GOOD OPPORTUNITY FOR COMPETENT PERSON.

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Need man with initiative and drive. Construction survey, estimating and layout. Expanding Midwest organization—opportunity. Degree not required. Experience in marine construction helpful but not essential. Salary open depending on applicant. Replies confidential. Advise personal data, work and educational background, salary expected.

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PROJECT ENGINEER WANTED

Graduate Mining, Metallurgical, Chemical or Mechanical Engineer, preferably 25 to 35 years old, wanted by medium size progressive heavy machinery manufacturing company located in Southeastern Pennsylvania. To assist in design and preparing for market of various lines of equipment used in mineral dressing, heavy chemical, cement and rock products industries. Must have had engineering and field experience, and be willing to work on drafting board, travel and do field service. Opportunity also exists for a properly qualified individual, eventually to become a sales engineer. Salary open.

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Manager for Western gravel and concrete producer. Will pay $10,000 per year for qualified man, with ample chance for increase if you can earn it. Reply to

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Engineer (BSCE) 20 years experience all phases of quarrying, crushing, screening, blasting, and cost control seeks position as plant supt. with growing organization. Available immediately. Prefer Eastern location.

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SUPT. AVAILABLE

Age 54. Over 30 yrs. experience in crushed stone, open pit, and mine; 25 yrs. with one company. Best reference.

HUGH LAMBERT

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Sand and Crushed Stone Plant

Fourteen acres of top grade stone. Servicing mixer trucks, very close to the city of 125,000. Operating to full capacity. Eastern state.

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Oregon, Illinois • Phone 531-K

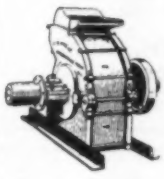
FOR SALE

Southern California's only lime rock deposit remaining independently owned, and capable of supporting large scale operation. Location near existing plants (125-miles Los Angeles), assures labor supply and zoning. Purchase inquiries invited—no promotions.

BOX PQ-201, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

DAY

PULVERIZER - CRUSHER



FOR EVERY AGGREGATE PROBLEM

Modern engineering service of ARMSTRONG-DELAY, INC. includes the design and construction of complete new crusher plants as well as of all types of accessories.

Belt conveyors, bins and screens, designed to answer every aggregate producing problem, are built to fit individual requirements.

CONTINUOUSLY MANUFACTURED SINCE 1914

ARMSTRONG-DELAY, INC.
1912 Dayton Blvd.
Chattanooga 5, Tennessee U.S.A.

SUPER C TURNAPULLS

For cheap quarry stripping, Two Model Super C Turnapulls. Rubber 75% in one, 60% on the other.

Good Condition
F.O.B. Nashville, Tennessee
$3,500.00 each

EUCLID-TENNESSEE, INC.
Post Office Box 1176
Nashville, Tennessee
Telephone—ALpine 6-1648

FOR SALE

1—8" Manganese dredge Pump, V Pulley drive—A-1 Condition $1500.00
1—Link belt twenty-five foot (25') Dewatering Elevator. $1000.00

ANDERSEN SAND & GRAVEL CO.
1700 S. WEADOCK ST.
SAGINAW, MICHIGAN

FOR SALE

Two practically new electrically heated 4' x 10' Hum-mer vibrating screens now operating in Youngstown, Ohio. 25 KW Buda diesel generator set, 220/3/60, 1200 RPM, excellent condition, located at Chicago.

MID-CONTINENT COAL AND COKE CO.
Mr. Davis, 105 West Adams Street
Chicago, Illinois.—Financial 6-4350

Barber-Greene

has opportunities for BELT CONVEYOR ENGINEERS

Openings include design, development, field engineering and sales opportunities.

Opportunities for both experienced and inexperienced mechanical and civil engineering graduates.

Training program available to supplement technical background and experience. Barber-Greene is one of the outstanding growth companies, which offers life-time careers to outstanding men.

Sumbit resume outlining background, salary desired, etc., to: Personnel Manager

Barber-Greene

AURORA, ILLINOIS

REBUILT AND NEW

GUARANTEED MOTORS

M.G. SETS • GENERATORS

Hoists • Compressors • Transformers
Units of Every Size and Description

SQUIRREL CAGE MOTORS

3 phase, 60 cycle, 220 or 440 volts (*2300 volts or higher)

H.P.	Make	Type	Speed
1250	*Al-Ch.	ANX	3600
1200	*Al-Ch.	ARW	1200
750	*Westg.	CS	900
500	*Al-Ch.	ARW	3600
500	*G.E.	KT5698	900
500	G.E.	KT-424	450
450	*Al-Ch.	ARW	1800
400	G.E.	KT-424	360
300	*G.E.	K-6344Y	1200
300	G.E.	K-6353TEFC	720
250	Westg.	CS-TEFC	1800
250	G.E.	KT-559	1800
250	*L.-Allis	OEX-148	720
250	*G.E.	IK	600
250	G.E.	IK-17A	600
250	Westg.	CS-14	514
250	*Gr. Wh.	8C-68	900
200	*G.E.	FT-549Y	3600

SLIP RING MOTORS

3 phase, 60 cycle, 220 or 440 volts (*2300 volts or higher)

H.P.	Make	Type	Speed
2000	*G.E.	MT	600
1250	*Al-Ch.	ANY	1800
1250	*Westg.	CW	600
1000	*Westg.	CW	250
700	*Al-Ch.	ANY	1200
600	*G.E.	MT	450
500	Westg.	CW	350
500	Westg.	CW	900
400	Al-Ch.	3 brg.	450
300	*G.E.	IE-15A	1800
250	*G.E.	1-M	450
250	Westg.	HF-15H	600
200	G.E.	IK-15B	900
200	G.E.	IM	600
150	Cr. Wh.	50-R	1800
150	G.E.	MT-549	1800
150	*Wagner	RS-131	900
150	Westg.	CW	450

AND MANY OTHERS

WE'LL SELL, BUY OR TRADE
PHONE CANAL 6-2900

CHICAGO Electric Co.
1329 W. CERMAK ROAD
CHICAGO 8, ILL.

EQUIPMENT LOCATED

GA. - N.Y. - CALIF. - OHIO - TEXAS - ILL.

GRINDING MILLS

BALL MILLS—8x7, 5x10, 6x7, 6x8, 6x9, 6x10, 6x12, 7x7, 7x5, 7x8, 8x6, 8x14 & 5'x18'. Also 5'x8'.
HARDINGE—16"x48", 8"x48", 8"x22", 8"x18", 6" x36".
ROD MILLS—5x10, 4x7, 4x14, 5x10, 5x14, 6x12 & 8'x12'. Also 5'x19'.
2—Denver 30"x54".
TUBE MILLS—3'x12', 5'6"x22', 5'x18' & 6'x22'

HAMMERMILLS

13—Jeffrey 36x24, 36x36, 30x36, 36x48, 42x36 & 42x48.
WILLIAMS GA30—24x30 & GA60—24x60.
DIXIE 5046—MOGUL 50x40 & 20x30.
GRUENDLER 5XD—48x30 & 1—5XA—20"x20".
2—PENNA. 8XR—100 TPH.
UNIVERSAL No. 4—36x36.
PENNA. THOR 8XT 13-48. Size 48x54.

APRON FEEDER

3—5'x8', 3'x12' & 54"x10'3".

AIR SEPARATORS

5 Sturtevant 10', 14' & 16'.
4 Gayco 5', 6' & 5'.
1—12 D Roto Clone.

FILTERS, SEPARATORS—CLASSIFIERS

11'6"x18', 14'x18' & 8'x10' Oliver Drum Filters.
6'x30' Dorr DSD Duplex Classifier.
6'x14' HARDINGE COUNTER CURRENT.
DINGS MAGNETIC TYPE IR 3 STAGE 60".
THICKENER, ALSO 3 DORR & 26'x10'.
RAKE & BOWL CLASSIFIERS, 2x15 SSFR, 3x32 DSF DORR 3x24', 10"x10" TURRENT BOWL.
36"x10'2" Wemco Spiral Classifier.
16—5'x25', 8'x24' & 5'x20' Rake Classifiers.
9—Turrett Bowl Classifiers 2'x24'10"x10', 3'x24'x13', 4'6"x26'x16', & 8'x21'x24'.
17—Thickeners Dia. 100', 80', 80', 34', 10', 13'.
3—Hydro Separators 60"x45' & 20'x8'.
3—Wemco 10'x50' Sand Launders.

ROTARY DRYERS & KILNS

ROTARY KILNS: 4'x22', 6'x28', 6'x8'x80', 8'x125', 3—9'x80', 4'x29', 6'x8', 5'x7'x80' 8'x125', 2—7'x110'.
ROTARY DRYERS: 3'x26', 4'x30', 4'x40', 5'x35' 6'x40', 6'x30', 11'x75', 4'x30', & 90"x80'.

JAW CRUSHERS

BLAKE TYPE—66x84, 40x45, 42x48, 48x60, 24x36, 18x36, 15x30, 13x30, 13x24, 12x16, 10x20, 30x42.
SINGLE SHAFT—18x36, 15x36, 15x30, 10x40, 10x30, 10x20.
CAM & ROLLER—24x40, 14x36, 11x26, 10x20, 6x20.

GYRATORY FINE REDUCTION CRUSHERS

NEWHOUSE 7", 10", 14"—KENNEDY 10S, 25S, 27—SUP. McC. 6" & 10" AL. CHAL. 22SR, TRAYLOR TY 36".

GYRATORY STD. PRIMARY CRUSHERS

6", 10", 14", 15", 20" & 36" SUP. McC.—GATES AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12K.
PARTS FOR 42" SUPERIOR McCULLY.

57 VIBRATING SCREENS

NIAGARA AC—ROBINS—LINK BELT—2x5, 2x8, 3x8, 3x10, 4x5, 4x8, 4x10, 4x14, 4x16, 5x8, 5x10 & 5x14, 1-3-3 & 4 Decks.

LOCOMOTIVES

8—18 Ton & 10 Ton Plymouth Diesels.
1—65 Ton & 5—45 Ton G.E. Diesel Elec.
10 TON DAVENPORT & 25 Ton Plymouth Gas.
2—14 Ton Brookville Diesels. Also 10 Ton Diesel.
8—PLYMOUTH GAS. 6 - 8 - 10 TON.
23—BATTERY & TROLLEY, 4, 6, 8, 10 TON.

LOCOMOTIVE CRANES

20 TON OHIO STEAM, 50 FT. BOOM.
25 TON AMER.—30 TON OHIO DIESELS.

MERRICK WEIGHTOMETERS

7—42 In., 30 In., 24 In., 18 In.

STEEL DERRICKS

GUY: 6 TON 85 FT. BOOM, 25 TON 80 FT. BOOM, 15 TON 100 FT. BOOM, 20 TON 115 FT. BOOM, 50 TON 100 FT. BOOM.
STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 125 FT. BOOM. 1—5 TON 100 FT. BOOM.

ASPHALT & OIL TANKS

15—8,000, 10,000 & 20,000 GAL. CAP. WITH COILS. 6—10,000 GAL. R.R. CAR TANKS.

RAILWAY CARS

177—DUMP STD. GA.—20, 16, 12, 8 & 4 YD.
26—FLATS—10 TON, 40 TON, 50 TON CAP.
44—TANK CARS—8,000 & 10,000 GAL. CAP.
75—Y Dump Cars, 1¼ & 3 Yd.

R. R. CAR DUMPER

150 TON CAP. STD. GA. CAR DUMPER.

AIR COMPRESSORS—ELECTRIC

198, 420 & 676 WORTHINGTON BELTED.
1302 CFM & 1574 CFM INGER. RAND PRE-2.
1170 CFM GARDNER DENVER HAE1084-2300 V.
1578 & 2200 CFM—OCE—CHGO. PNEU. ELEC.
3078, 3904 & 5040 CFM Inger. Rand.

HYDRATORS

CLYDE HYDRATOR WITH KUNTZ CONTINUOUS DUSTLESS SYSTEM, 4-5 T.P.H.

42" CONVEYOR EQUIPMENT

42"x28' Stacker Conveyor.
6—Conveyors, 42", 500' to 600'.

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

FOR SALE

Rotary Drill Supplies in Stock at Columbus, Ohio

Subs, Spiral Reamers, Drill Pipe and Rotary Bits.

THE WHITE-ORR COMPANY
766 Northwest Blvd.
Columbus 8, Ohio

FOR SALE

1—Deister 3' x 8' 4 deck vibrating screen complete. Ready to work motor, drive discharge chutes, screen cloth and extra parts. Excellent condition. $2,000 f.o.b.
1—Allis Chalmers 7½K Gyratory Crusher with numerous spare parts. Good condition. Price, $3,500 f.o.b.

CRUSHED ROCK PRODUCTS, INC.
Mazon Road Schenectady 1, New York

FOR SALE BY OWNERS

COMPLETE 8" SAND PLANT
Cat. D-17, 8" Amsco Pump, Steel Barge, Quickway Crane, 8" Spiral Pipe, Boat Floats, etc.
Located near Louisa, Ky.

Write: **ELKHORN SAND CO., INC.**
P. O. Box 326 St. Albans, W. Va.

FOR SALE
4500 MANITOWOC

1½ years old—looks like new. D-386 Cat engine; 120' boom, 5 yd. bucket.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Natl. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

FOR SALE

One 50 ft. Dorr Hydroseparator Mechanism, F.O.B.
One 5" Wilfley Model CB Sand Pump used in conjunction with Hydroseparator.

ASHLAND SAND AND GRAVEL CO., INC.
Ashland, Mass.
Telephone Framingham—Trinity 3-8980

QUARRY EQUIPMENT

Pioneer 3042 primary crushing unit with feeder, etc.
Cedarapids 3240 primary. New condition.
Cedarapids 4033 hammermill secondary unit. Rebuilt.
Cedarapids model CCC 4024 secondary roll unit.
Cedarapids model BBB 1036 jaw crusher scalping unit.
Cedarapids 4033 hammermill. Rebuilt.
Cedarapids 2033 hammermill. Excellent.
Cedarapids 42" x 10' apron feeder.
Williams 20" pulverizer.
Austin-Western 15x24 jaw. Excellent.
Cedarapids 4" x 12' double deck screen. Rebuilt.
Niagara 3' x 12' triple deck screen. Reconditioned.
Hewitt-Robins 4' x 9' triple deck Gyrex. Reconditioned.
Cedarapids 3' x 10' double deck screen.
15 cu. yd. Cedarapids sand drag. New.
12" x 35' inclined open elevator. New.
Heltzel 40' x 12" 275 bbl. encl. elevator.
27½ ton single compartment 8' x 12' bin.
60-ton, 2-comp., 8' x 18' storage bin w/clam gates.
100-ton, 2 comp., 13'x23' bins.
Special bins to your specifications.
Conveyors—18"-24"-30"-36". Also belting.
18" dia. x 30" face magnetic pulley.

SHOVELS AND CRANES

Lorain 820, 2-yd. diesel shovel, crane, drag. Reconditioned.
Lima 24 Paymaster ¾ yd. diesel. Very good.
Brownhoist 1-yd. gas shovel-crane.
Lorain MC-414 20-ton truck crane. Excellent.
Lorain TL-20 4x4 self-propelled. Reconditioned.
Lorain TL-20 6x4 15-ton truck crane. Reconditioned.
Lorain MC-3 6x4 11-ton truck crane. Good condition.
Speeder Model 60 shovel, hoe clam. Reconditioned.
Unit model 514 Gas backhoe. Overhauled.

TRACTORS, TRUCKS, SCRAPERS, ETC.

3—Euclid rear dumps, 22 ton. Good condition.
3—Cat DW10 scrapers. Good condition.
1—Cat D7 with bulldozer blade.
1—Allis-Chalmers HD19 crawler with Carco blade.
1—Allis-Chalmers HD10 with Baker bulldozer.
1—Int. TD18 with Bucyrus-Erie bulldozer blade.
1—Int. TD9 with front shovel attachment. Reconditioned.
1—Woolridge 15-18 yd. Model TCB scraper. Rebuilt.

DIESEL POWER UNITS

Caterpillar D7700, 63 H.P. @ 1000 RPM. Rebuilt.
Caterpillar D13000 6-cyl. diesel engine, Twin Disc clutch, extended shaft, outboard bearing, 145 H.P. @ 1000 RPM. Rebuilt.
Caterpillar D17000 8-cyl. diesel engine with Twin Disc clutch, 190 H.P. @ 1000 RPM.
GMC 6-71 diesel engine radiator to and including clutch, 130 H.P. @ 1600 RPM constant duty, electric starting equipment. New condition.
GMC 12-cyl. twin diesel engine complete from radiator to and including automotive type clutch with gear reduction unit, fabricated base, electric starting system, 200 H.P. @ 1300 RPM. New condition.

ASPHALT PLANT

Barber-Greene Model 848 with drier, graduation unit, etc.

AIR COMPRESSORS

500 cu. ft. Gardner-Denver diesel, rebuilt.
365 cu. ft. Gardner-Denver diesel, rebuilt.

L. B. SMITH, INC.
CAMP HILL, PA.
Phone Harrisburg REgent 7-3431

DEPENDABLE USED MACHINES

Special:—Pioneer 18V port. gravel plant; jaw and roll crushers; Cummins Diesel; new in 1950.

A-W ½ yd. shovel
Quickway truck crane
Lima ¾ yd. dragline
Koehring 1¼ yd. dragline
Hopto on Studebaker
Pioneer 9x36 port. crushing plant
Pioneer 40x22 roll crusher plant
B-G port. asphalt plant
Harris Power Horse, 2½ yd. bucket
B-G #358 gondola car unloader
16x16 roll crusher
9x36 jaw crusher
2x6 screen
40' bucket elevator
Lessman loader

These machines reconditioned in our newly-built daylight plant. Come see them!

10004 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

FOR SALE

Farrell-Bacon 18x48 Jaw Crusher. Machine in new condition. With or without power. Machine may be seen in operation.

GALLO ASPHALT CO.
1000 Springfield Ave. • Irvington, N. J.
Phone Essex 3-0055

200' or more 42" Belt Conveyors—complete
20x36 Lippman R.B. Jaw Crusher—latest
30 HP Hi-pressure self-contained boiler
Several Large Claridge Roller Brg. Fans
40—50 & 150 HP Package Type Boilers
7'x60' Rotary Kiln—w/mtr. & Drive
4x8' Vib. w/ Stainless Steel Screens
ROSS Lift Trucks—#6 & 10H—excellent

H. & P., 6719 Etzel, St. Louis 14, Mo.

WANTED

Allis-Chalmers #9 K Gates Gyratory Crusher, left-hand drive. (Drive on left of discharge, looking into discharge chute).

GARY SLAG CORPORATION
BOX 444
GARY, INDIANA

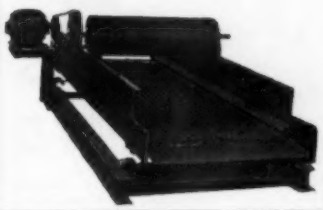
BONDED EQUIPMENT BARGAINS

IMMEDIATE SHIPMENT FROM OUR FACTORY — WRITE, WIRE OR PHONE

NEW BONDED® HEAVY DUTY VIBRATING SCREENS

Model Number	Screening Area	No. of Decks	Sale Price
124AS	2' x 4'	1	$355
224AS	2' x 4'	2	375
126AS	2' x 6'	1	375
226AS	2' x 6'	2	395
136AS	3' x 6'	1	495
236AS	3' x 6'	2	585
336AS	3' x 6'	3	815
138AS	3' x 8'	1	575
238AS	3' x 8'	2	695
338AS	3' x 8'	3	845
138BS	3' x 8'	1	1110
238BS	3' x 8'	2	1165
338BS	3' x 8'	3	1250
248BS	4' x 8'	2	1695
348BS	4' x 8'	3	1850
2410BS	4' x 10'	2	1775
3410BS	4' x 10'	3	2095
3412BS	4' x 12'	3	2395

NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry. HEAVY DUTY MODELS, TYPE BS: 4-bearing positive throw, eccentric shaft; 3' x 8' to 5' x 14', 1 to 5 decks. GENERAL DUTY SCREENS, TYPE AS: eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for new 8-page Bulletins 1086 and 1087.

BONDED CARRIES LARGE STOCKS OF SCREEN CLOTH FOR IMMEDIATE SHIPMENT

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2¼" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, 1/32" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1166	$ 672
14"	50'	2016	1064
14"	85'	3206	1612
16"	20'	1083	592
16"	45'	1928	1012
16"	60'	2494	1264
18"	25'	1327	738
18"	45'	1986	1085
18"	85'	3466	1798
18"	100'	4001	2065
20"	25'	1366	770
20"	60'	2762	1426
20"	90'	3950	1995
24"	25'	1428	835
24"	45'	2227	1237
24"	70'	3226	1744
24"	100'	4425	2339
30"	50'	2668	1504
30"	70'	3576	1971
30"	90'	4483	2432
36"	25'	1632	1040
36"	45'	2492	1561
36"	60'	3327	1950
36"	100'	5102	2990

For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt	$15.66	per foot
For 16" belt	16.78	per foot
For 18" belt	17.90	per foot
For 20" belt	18.95	per foot
For 24" belt	20.66	per foot
For 30" belt	23.02	per foot
For 36" belt	26.00	per foot

NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck 1/8" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.

Width	List Price	Sale Price
14"	$3.43 foot	$2.75 foot
16"	3.85 foot	2.88 foot
18"	4.27 foot	3.19 foot
20"	4.69 foot	3.69 foot
24"	5.55 foot	4.14 foot
30"	6.77 foot	5.06 foot
36"	8.01 foot	6.00 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/8" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting. For more severe service, high tonnages and abrasion resistant. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

Width	Ply	List Price	Sale Price
18"	4	$5.09 foot	$3.72 foot
20"	4	5.57 foot	4.03 foot
24"	4	6.58 foot	4.80 foot
30"	4	8.05 foot	5.89 foot
24"	5	7.68 foot	5.61 foot

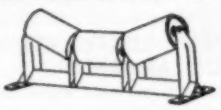
Additional widths and plies available at low prices. Write for Free Sample.

NEW BONDED GEAR REDUCERS

H.P. At 20:1 Ratio	H.P. At 30:1 Ratio	Price
3	2	$ 81
5	3	142
10	7½	228
15	10	286
20	15	394
25	20	468
30	25	575
40	30	750
60	50	925

Reducers are right angle with worm on bottom (underdriven) and all models are fan cooled by means of a radial fan. Reducer will operate in either direction. Other sizes and ratios available at bargain prices.

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE

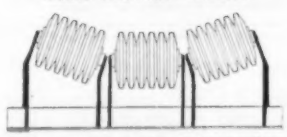


3-roll, 5" diameter Troughing Idlers for:			
14" belt	$17.25	24" belt	$19.75
16" belt	18.00	30" belt	20.50
18" belt	19.00	36" belt	21.25
20" belt	19.25	48" belt	23.75

1-roll, 5" diameter Return Idlers for:			
14" belt	$6.75	24" belt	$ 8.00
16" belt	7.00	30" belt	8.75
18" belt	7.50	36" belt	9.25
20" belt	7.75	48" belt	10.75

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable pre-lubricated Sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings. Maintenance is negligible.

NEW BONDED RUBBER DISC IMPACT IDLERS



Impact idlers are used at the loading end or transfer points of troughing idler conveyors to absorb shock of heavy material falling on belt, thus reducing damage to belt. This cuts production costs and extends belt life. Rolls are made of a series of specially designed impact absorbing rubber discs mounted on steel tubing with easily replaceable sealed ball bearings. Also can be furnished with greasable type alemite fitted bearings. Interchangeable with Bonded standard idlers and other well known makes. Flat and return belt impact idlers available on application.

14" belt	$58.00	24" belt	$100.00
16" belt	69.00	30" belt	110.00
18" belt	80.00	36" belt	130.00
20" belt	90.00	48" belt	172.00

BONDED MAKES A FULL LINE OF CONVEYOR PARTS, ACCESSORIES AND PARTS TO BUILD YOUR OWN CONVEYORS.
WRITE FOR BULLETIN #1138 AND/OR BULLETIN #938 ON FEEDERS

VISIT THE BONDED FACTORY ANY TIME — BONDED MACHINES AVAILABLE ON TIME PAYMENT PLAN

BONDED SCALE AND MACHINE COMPANY

PHONE: Hickory 4-2186 Days; WRITE FOR FREE CATALOG AND PRICES PHONE: AXminster 1-2213, Evenings

110 Bellview Mfgrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders Columbus 7, Ohio

FOR SALE OR RENT

ECA QUALITY REBUILTS

2—**Worthington Mdl. M80,** 445′ displacement, 369′ actual, 75 HP 3/60/220/440, 100#

1—**Ingersoll-Rand Mdl 75MH,** 100#, 445′ displacement, 360′ actual, 75 HP 3/60/440 volt

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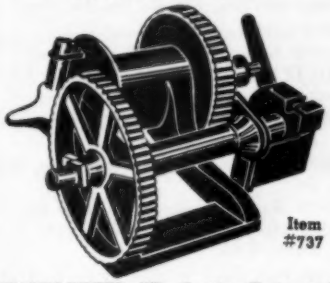

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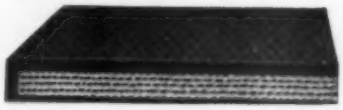

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Conveyor Pulleys, 30" D. x 60" Face
240' New 42" Conveyor Belt 8 ply
158' Used 42" Conveyor Belt 7 ply
399' Used 36" Conveyor Belt 5 ply
69—36" Trough Idlers 5 roll type
58—30" Trough Idlers Misc. Types
106—42" Trough Idlers, antifriction
135—48" Trough Idlers, antifriction
V-Belt Sheaves, approx. 250

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Minneapolis Moline 25 ton TRUCK CRANE.
Caterpillar Tractors D7 and D8. Good.
43 & 106 ton GE Diesel Elec. std. ga. LOCOMOTIVES.
150 HP Flory 2 drum elec. HOIST.
14" x 14' Eagle single screw WASHER. Others.
DRYERS: 4x31, 5x30, 5½x50, 7x110, 8x123.
MILLS: 5x16, 6x8 Ball. 5x14 Rod. Gruendler 4XC, 6XD, 3624, CR 3033, Univ. 3 Hammer.
CRUSHING PLANTS: Austin West. 81, CR Super.
CRUSHERS: 8x10 Sturtevant, 9x16 CR, 1020 AC, 1218 Acme, 1536 Univ., 1836 Iowa port., 1838 & 2036 Austin West, 2536 Telsmith, 4042 & 4836 Farrell, 4248 Traylor JAW. 9K Gates. 2'4" Traylor GYR.
18" x 30' B-G Port. Belt CONVEYOR.
SHOVELS & DRAG: Marion 381, 7200. Page 621, Koehring 1005 Insley K12. Link Belt K595.
EQUIP HERE: 24x32" Ball Mill, 100 ton Bin, 40" x 70' indirect heat Dryer, 315, 476, 600 CFM Air Compressors. NW6 Dragline, BE29T Well Drill.
Repres: Bonded Scale and Machine Co.

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TRANSIT MIXERS

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Jaeger	3 Yd.	HI-Discharge, Serial No. 3HC8-J4680, mounted on Reo Tandem Truck.
Jaeger	3 Yd.	HI-Discharge, mounted Int. "K-11" 6x6, Very Clean, (2).
Jaeger	3 Yd.	HI-Discharge, Serial No. 50337, mounted on Diamond T Tandem Axle Truck.
Smith	3 Yd.	HI-Discharge, mounted Ford Tandem.
Smith	3 Yd.	HI-Discharge, Serial No. 50337, mounted on Diamond T Tandem Axle Truck.
Smith	3 Yd.	HI-Discharge, mounted Int. "LI70" Tandem (2).

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Gallon	"116"	Used Diesel Motor Grader.
Unit		Shovel Attachment complete for Unit "514".
Unit	"514"	Used ¾ Yd. Trench Hoe or Dragline, gas power. Cheap
Barber Greene	"522"	Bucket Loader, pneumatic-tired.

Note: Above equipment belongs to us.

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Track Accessories
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One (1) Bucyrus Erie 29-T Churn Drill, in good condition. Price #3—$8800.00. New 1951.
Above drills electric motor driven, crawler mounted.
Large quantity of bits, drilling tools and spare parts.
In use until February, 1955, when change in drilling method made these surplus.
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GRIZZLY CONVEYORS: Robins Live Roll, one 5 x 48 x 16 and one 7 x 36 x 12.

PAN CONVEYOR: 48" x 110 ft. complete with motor, reducer, etc., heavy duty type, designed for rock.

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ROD MILLS: 2—Marcy Open End size 5' x 14'.

DRYERS: 5 ft. x 30 ft. complete with all auxiliary equipment. 2—Heavy duty 9' x 70' with all equipment, new condition.

JAW CRUSHERS: 9 x 15, 10 x 20, 15 x 36, 18 x 30, 24 x 36, 30 x 42, 42 x 40, 48 x 60, with or without motors.

CRUSHING ROLLS: New Holland double roll type, 20" face, 30" dia.

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Bucyrus-Erie Draglines, 2½ yd. to 8 yd.
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Manitowoc Shovels, 2½ yd. to 5 yd.
Marion Shovels & Drags, 4 yd. to 9 yd.
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Osgood Shovels & Drags, 1½ yd. to 2½ yd.
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Caterpillar Graders & Dozers.
Hi-Lift Shovels.
P&H Truck Mtd. Crane & Hoe, ⅜ yd.
Caterpillar D-4 Front End Loader.
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Construction Equipment
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Withstands far greater

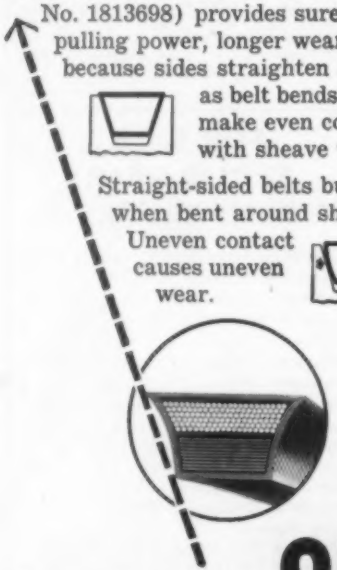
SHOCK LOADS

than any standard V-belt

Here are the interesting reasons why Gates Super Vulco Ropes stand up months, even years longer than *any* standard V-belts...

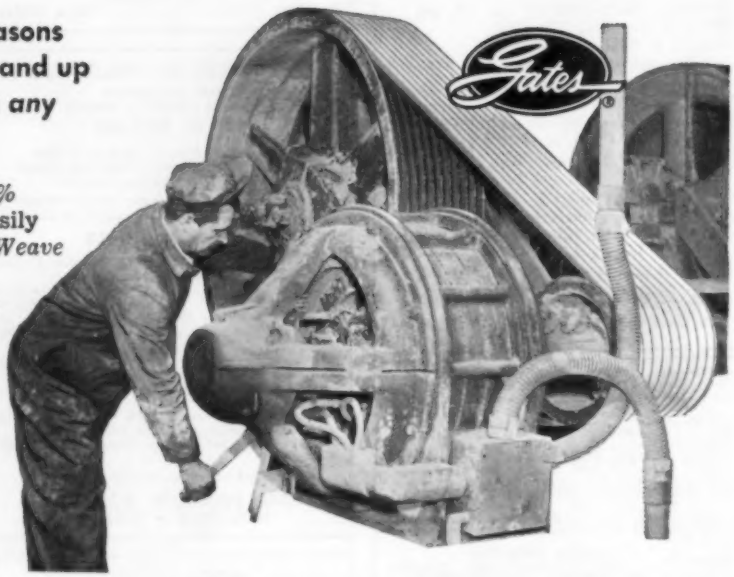
1. *Super-Strength Cords* provide 40% greater horsepower capacity . . . easily absorb heavy shock loads. **2.** *Flex-Weave Cover* (U.S. Pat. No. 2519590) provides greater flexibility with far less stress on the fabric. Cover wears longer — increases belt life, lowers belt costs.

3. *Concave Sidewalls* (U.S. Pat. No. 1813698) provides sure pulling power, longer wear because sides straighten out as belt bends— make even contact with sheave walls.



Straight-sided belts bulge out when bent around sheave

Uneven contact causes uneven wear.



SHOCK LOAD of this big jaw crusher at Canadian Quarries, Ltd. is absorbed by Gates Super Vulco Rope Drive. Wherever shock load is severe, Gates Super Vulco Ropes cushion the shock—keep machinery replacement cost down

3 other outstanding advantages

Resists Oil, Heat and Weather: Long life is assured even in the presence of excessive oil . . . even under prolonged exposure to heat and weather.

Provides Static Safety: The high electrical conductivity of Gates Super Vulco Rope provides safer drives in explosive atmosphere.

Saves Space: Higher horsepower rating and greater resiliency may permit fewer belts, or smaller sheaves where space saving is vitally important.

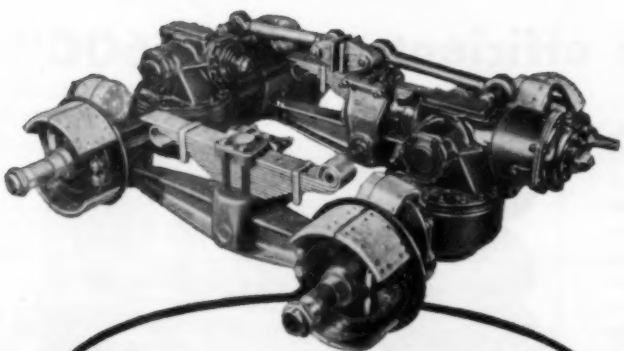
The Gates Rubber Co., Denver, Colorado
World's Largest Maker of V-Belts

Gates SUPER Vulco Rope

The V-Belt with 40% more horsepower capacity

TPA 57

AUTOCAR TRUCKS WITH GREAT, NEW 44,000 LB. TANDEM AXLE HAVE REALLY RUGGED PULLING POWER



BIGGER and huskier than ever—these new "All-American" Autocars for both on and off highway work. This heavy-duty tandem with 44,000 lb. rating has rugged power and stamina. Positive traction, too, with driver-controlled power lockout that makes rough and tough going easy. Plus Autocar nut and bolt construction!

Send for your copy of the New **AUTOCAR** *Construction Folder... NOW!*

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AUTOCAR TRUCKS

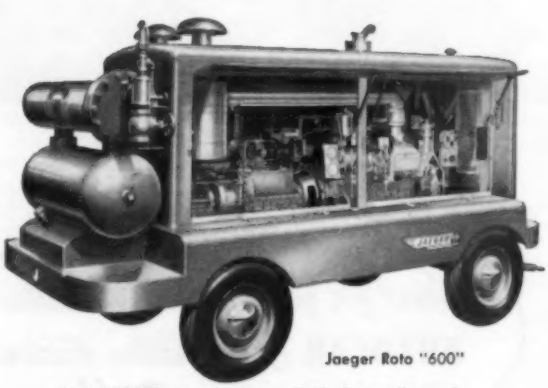
DIVISION OF THE WHITE MOTOR COMPANY, EXTON, PA.

DRILLING 70′ TO 80′ OF 3″ HOLES PER HOUR IN HARD LIMESTONE, ON 7 GALLONS OF FUEL: Marble Cliff Quarries, one of Ohio's largest, is using this Jaeger Rotary 600 on these two quarry rigs with 4″ drills and air tugger hoists to drill 19′ holes of 3″ final diameter in hard flux limestone. Because of the constant, unfluctuating 100 lbs. pressure maintained by the Jaeger Rotary, each drill averages 350′ to 400′ per 10-hr. day. The compressor never runs faster than 1600 rpm, with a resulting minimum of wear and fuel consumption of only 7 gph.

Jaeger offers a fully efficient rotary "600"

In more than a year of use, on all types of big air work, the Jaeger Roto "600" has demonstrated two outstanding advantages over other rotary compressors. (1) *It operates at slower speeds*, resulting in lowest fuel consumption and longest life of engine and compressor. (2) It maintains 100 lbs. minimum pressure under all normal operation, *as smooth as steam*. Speed modulation is stepless over the entire operating range, and so instant-acting as to prevent any over-run and racing of engine. Controls are also extremely simple.

Jaeger also offers more efficient oil cooling, closer control of engine water temperature, elimination of cold weather "dry starts", 8-hour fuel tanks, wrap-around bumpers and many other advantages. For complete information, see your Jaeger distributor or send for Catalog JCR5.



Jaeger Roto "600"

Model "125" rotary is also available for smaller work.

THE JAEGER MACHINE COMPANY

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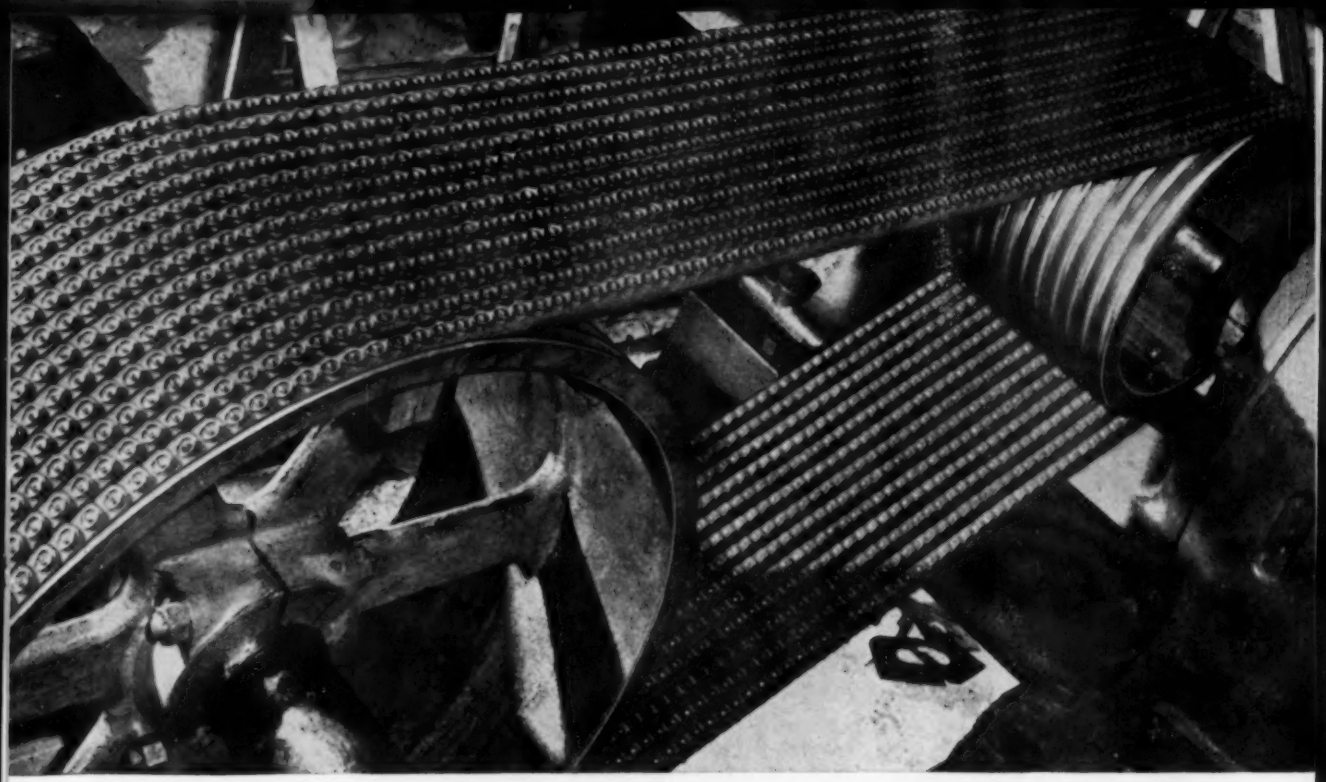

New Veelos TD & TE Heavy-Drive Adjustable V-Belts Drive Maintenance and Inventory Costs Down!

1 New Veelos TD & TE V-Belts are stronger, more durable!

New stud, cup-washer, T-screw design afford extra strength at points of stress. Greater strength, maximum flexibility mean cooler, smoother running belts! If a belt is accidentally damaged—replace the damaged links—not the entire belt!

2 Patented Veelos TD & TE adjustable V-Belts are easier to change!

They practically eliminate "down-time"! Just uncouple the worn belt or links and put on the new belt or links.

No lengthy production stops! Veelos Adjustable V-Belts give trouble-free performance with a minimum of maintenance required!

3 Veelos belts assure complete inventory in minimum storage space!

Stock just two 100 ft. reels of Veelos TD & TE widths —you have a complete inventory ready to handle *any* D or E belt drives. Just reel off the length desired. And Veelos stores in inches! Save money on inventory, stockroom space, deterioration of unused belts!

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LINK V-BELT

Veelos is known as Veelink outside U.S.A.

Get your free Veelos Data Book; many pages of important information on belt drives. Write to:

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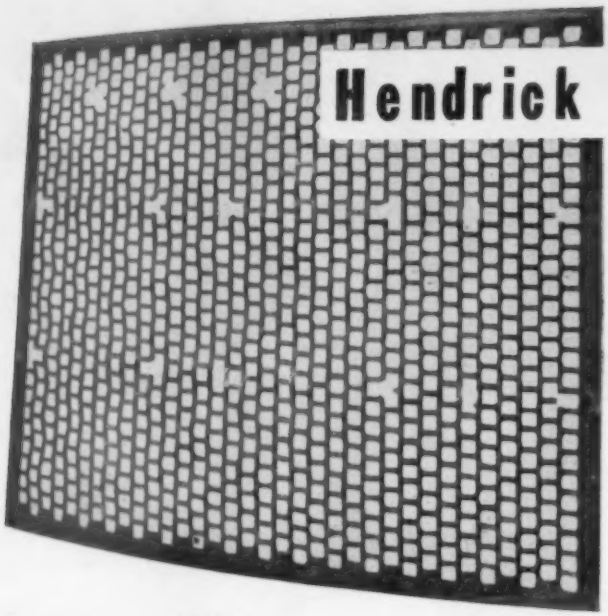

Hendrick Quality Steel Passes Every Test!

One quarry had trouble screening hard "Petersburg Granite" . . . screens wore out too quickly and had to be replaced. Then they switched to *H* quality perforated steel. Result? 400,000 tons of stone passed over one screen before replacement was necessary. Another quarry put an *H* quality steel screen to work . . . and after 3,000 hours of heavy-duty operation there wasn't any noticeable trace of wear!

Secret of Hendrick's success is our 80 years of experience in selecting and specifying the various analyses of steel best suited for the crushed stone industry. Hendrick perforated *H* quality steel is supplied in any size or shape of openings. For more information write Hendrick direct.

Hendrick — Pioneer Perforator of Special Quality Steels for 80 Years!

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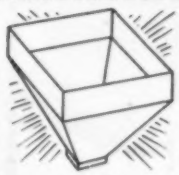
"The Marketplace of the Industry"

ADMIRO Protects *this* Bin...

Bins are subjected to severe abrasion and heavy impact. These units stay on the job much longer when made with ADMIRO Heat Treated High Tensile Alloy Steel.

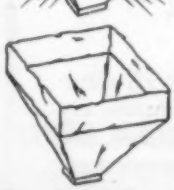
Widely used throughout industry, ADMIRO H. T. Alloy Steel assures minimum down-time for machines, plus high economy in maintenance and repair.

COMPLETE FABRICATING FACILITIES
Welding—Rolling—Forming
Intricate Shapes Cut to Specifications



Insures Longer Life

. . . *after* using ADMIRO



. . . *before* using ADMIRO

Recommended Applications:
Wear liner plates, crushers, chutes, buckets, dirt and rock recovery equipment. Special uses in Mining, Quarrying, Cement and Aggregate Plants.

Write for Bulletin

ADMIRAL ALLOY STEEL CORP. 850 Euclid Ave., Cleveland, Ohio

Low cost-per-pound steel liners?

Here's what happened when ordinary steel liners were operated in the same mill with ABK Metal liners. You can easily see the difference in wear in this photograph.

Low cost-per-ton* ABK Metal liners?

*Low cost per ton of material ground, of course. The slight additional first cost of ABK Metal is more than offset by its extra life, by reduced labor, by savings in equipment down-time.

ABK® METAL cuts cost 3 ways

1. ***Lasts longer*** . . . costs less per ton of material processed.
2. ***Slashes labor expense*** . . . of frequent liner replacement.
3. ***Prevents down-time*** . . . avoids costly losses in production.

Yes, three to four times normal life can be expected when ABK Metal replaces ordinary liners. That's because of its extreme hardness (500 to 700 Brinell) and very high resistance to abrasion. A controlled structure nickel-chrome iron, ABK Metal is produced *only* by American Brake Shoe.

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A-973

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Free Folder

How you can protect costly crushing machinery from tramp metal damage and prevent downtime from eating into profits is explained with concise text and pictures in this helpful folder. You'll discover an easy way to gain automatic protection from stray metal parts and scrap—both magnetic and non-magnetic—you'll see how easy it is to install and operate RCA equipment. Mail coupon below for your free copy.

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Please send me your new booklet on the RCA Electronic Metal Detector, "Stop Crusher Breakdowns."

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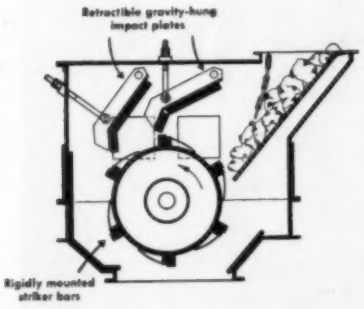
MORE NEWS ABOUT ROCK CRUSHERS

● HAZEMAG now introduces the **BLOCK-BUSTER**, a multi-stage (combined primary and secondary) impact crusher of large capacity and extremely heavy construction.

● It has a reduction ratio so great that many materials—cement rock, gypsum, etc. —can be crushed from shovel size to grinding mill feed in one pass, eliminating the secondary crusher.

● And where needed there is the special Hazemag "fineness-control" feature, yielding generous fractions in the desirable small aggregate sizes.



Cement, Lime and Gypsum mills alone account for more than 300 Hazemag Impactors. Over 1000 Hazemag Impact Crushers now installed all over the world.

Shown above: A typical "double-stage" reduction of cement rock—from 36"-40" shovel size to 80%-85% minus ½"—in one pass, open circuit.

HAZEMAG

HAZEMAG IMPACT CRUSHERS

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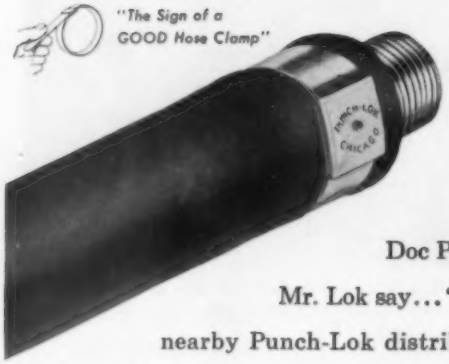
with PUNCH-LOK Hose Clamps

"The Sign of a GOOD Hose Clamp"



Doc Punch and Mr. Lok say... "See your nearby Punch-Lok distributor"— or write direct for product and price information.

PUNCH-LOK Company

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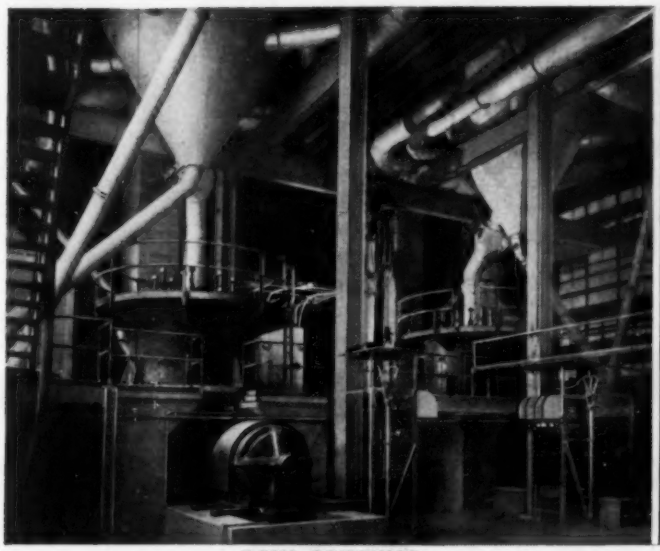

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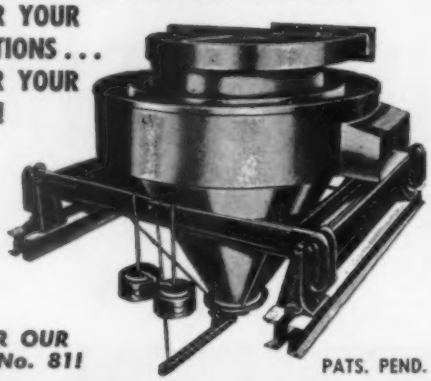

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Macks keep shovels on the go because they make fast hauls between mine or quarry and unloading site. They can be depended upon to meet schedules because Macks don't bog down or break down when the going gets tough. They handle the heaviest loads under the toughest conditions. They require minimum maintenance and provide maximum fuel economy.

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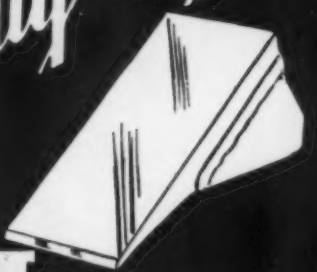

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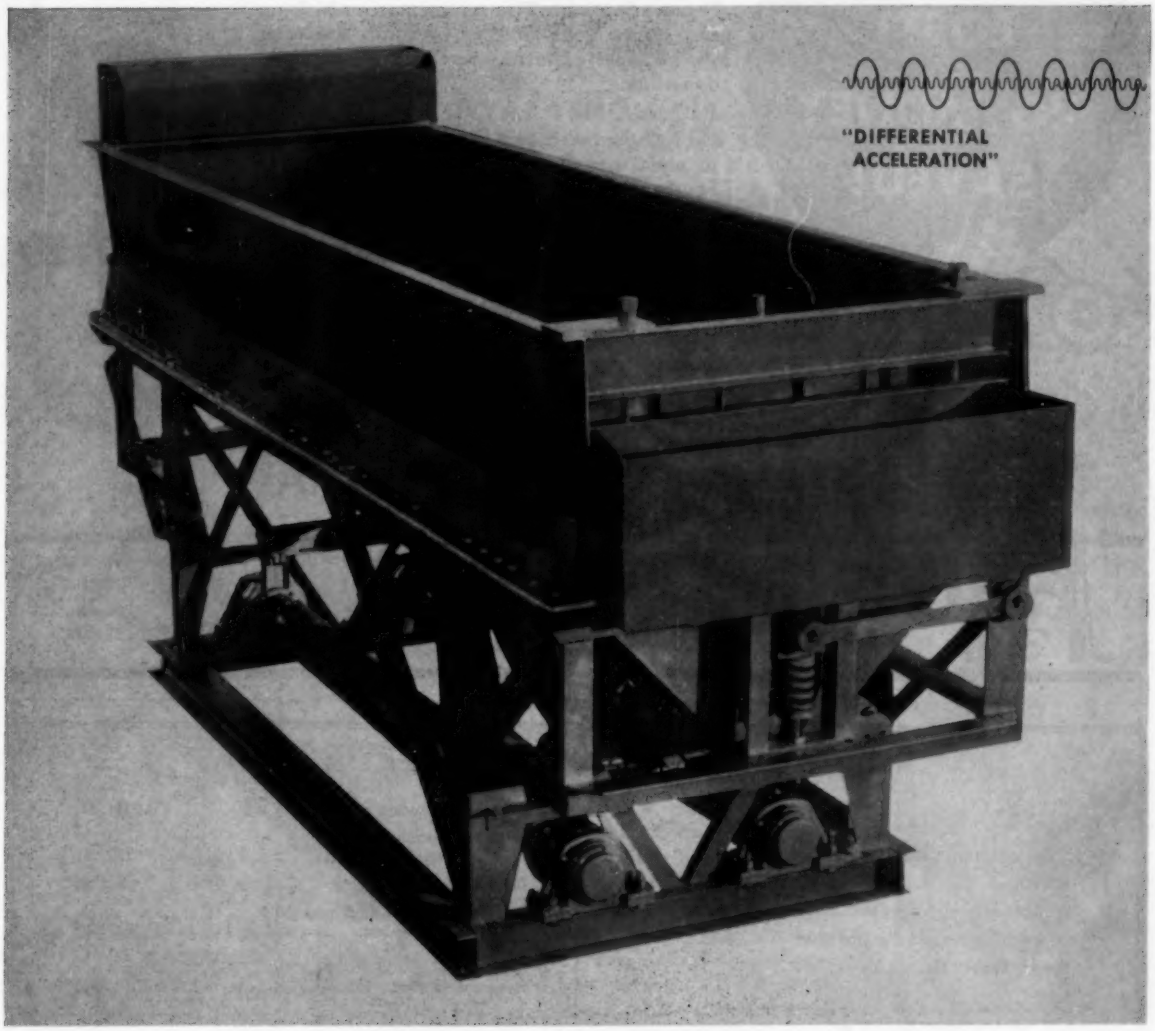
WEMCO INTRODUCES THE REMER JIG



a new tool for sand and gravel cleaning

At Eagle Sand & Gravel Company, Sioux Falls, South Dakota

60 TPH Jig feed contains 6.0 to 10.0% shale.
After Jigging, sand contains only 0.3 to 0.5% shale.*
*(Further elimination can be made with the Remer Jig, but is not required in this specification.)

This gravel deposit also contains iron oxide with a yellow ochre center. The Wemco Remer Jig eliminates 70 to 80% of even this material.

Owner, Robert F. Bruns says, *"We are more than pleased with this phenomenal new machine and at last are able to meet the tighter material specifications."*

Differential Acceleration utilized on the Wemco Remer Jig combined with the long, wide bed, results in a fast moving, completely live jig bed over this large area. This long jig bed provides adequate hutching capacity that saves your fine sand yet eliminates undesirable materials. A typical 5′ x 16′ jig will clean 40 to 60 tons per hour. (Even larger tonnages have been reported.)

If your sand is contaminated by any material of lighter specific gravity, you need the facts on the Wemco Remer Jig. Write today for literature. (Other Wemco products for Sand and Gravel Treatment include Sand Preparation Machines, Sand Pumps and Wemco HMS Mobil-Mills.)

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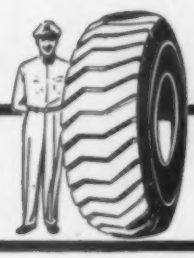

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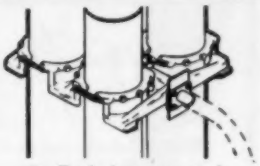
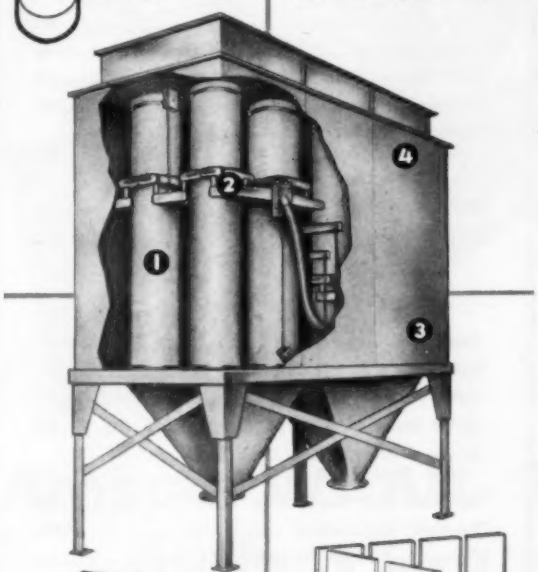
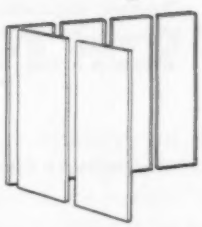
1 Uniformly dense felt filter bags... of wool or synthetics...produce maximum filtering efficiency yet have 6 times flow rate of ordinary woven filter material. Tiny pores catch and hold even sub-micron-sized particles. Bags measure 12" in diameter... up to 18' in length.



2 Exclusive reverse-air-jet action cleans entire bag area uniformly and automatically. Blow rings* travel up and down length of bag exterior . . . blowing through bag to remove accumulated dust from bag walls. Automatic cleaning never interrupts peak filtering efficiency.



3 Automatic pressure switch* eliminates overcleaning . . . prolongs bag life. Switch controls blow ring operation. Above normal pressure loss actuates rings which stop when pressure loss normalizes. Automatic self-cleaning occurs as often or as seldom as needed.



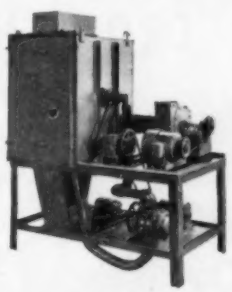
4 Prefabricated Aeroturn can be installed in one-quarter the time required by ordinary dust collectors of similar capacity . . . in half the space. Aeroturn arrives from the factory in easy-to-assemble prefabricated sections.

50% LOWER MAINTENANCE COSTS and 99.9%+ EFFICIENCY

with KOPPERS Series 12 Aeroturn Dust Collectors

Up To 75% Lower Installation Costs . . . Up to 50% Less Space! You can get rid of dollar-consuming dust far more economically with a Koppers Series 12 Aeroturn than with a conventional collector. The Aeroturn Dust Collector costs you less to install and maintain . . . occupies far less space. A Koppers Series 12 Aeroturn operates continuously and automatically at highest filtering efficiency.

Aeroturn's remarkably high filtering efficiency sends your plant and machinery maintenance costs way down. Your heating and cooling costs fall because you can recirculate air . . . cleaner than outside air. Koppers Series 12 Aeroturn Dust Collector is available with from 4 to 64 filter bags . . . Aeroturn's capacities range from 1,000 to 60,000 CFM. It only takes a few minutes of your time to discover for yourself the many cost-saving features of the Koppers Series 12 Aeroturn.



Factory-assembled and test-operated, Koppers Model D Aeroturn Dust Collector combines features of Series 12 with unusual compactness. Capacities range from 500 to 4,800 CFM.

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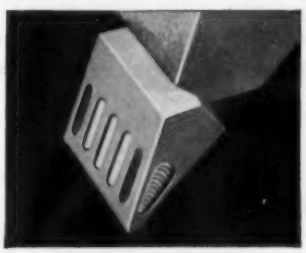
Amsco "WEAR-SHARP" Repointers outlast 2-part dipper teeth

One of the largest contractors on the St. Lawrence Seaway Project proved our point! He switched from two-part dipper teeth to Amsco® "WEAR-SHARP" Repointers, with grooves filled in by hardfacing.

Result: according to the contractor's own report, he's getting much better service life out of the tooth. And, in really rugged service, the teeth retain their cutting edge much longer . . . helping to maintain digging speed and conserve power.

Take a tip from this contractor's experience. Order Amsco "WEAR-SHARP" Repointers from your distributor—for longer service life, for better cutting action.

Hardface with Amsco Hardfacing Alloys and Welding Equipment, too!



"WEAR-SHARP" Repointers*

. . . have grooves on each end and on corner faces, which can be filled in with a tough hardfacing deposit. This equalizes wear and maintains a sharp cutting edge, prevents teeth from rounding or blunting. Available straight (as shown) or with crescent-shaped backs.

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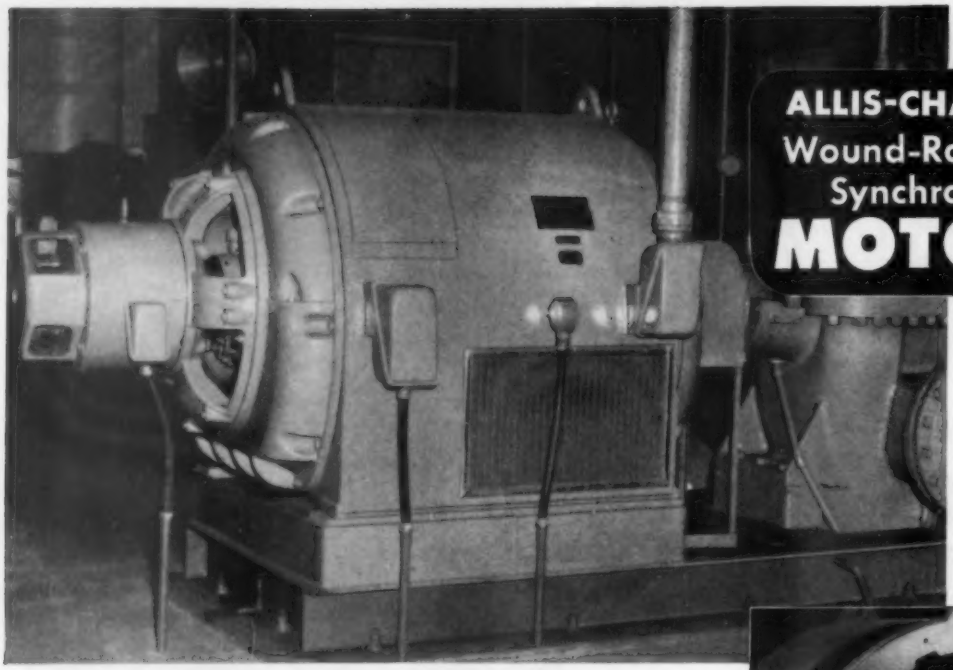
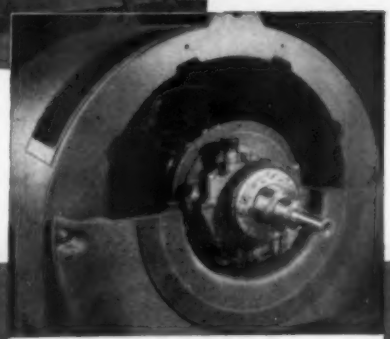


ALLIS-CHALMERS
Wound-Rotor and Synchronous
MOTORS

Shown is a 400-hp, 900-rpm end-shield bearing synchronous motor. Other Allis-Chalmers motors of this design are available from 250 hp at 300 rpm and up, in drip-proof and splash-proof construction.

Now full protection without loss of accessibility

All parts, including slip rings and leads, are enclosed — yet removable inspection covers and end-shield sections simplify maintenance.



Note accessibility offered by generous size opening covers. Upper half of end shield is removable for entrance to motor winding.

These motors combine modern functional design with maximum protection and accessibility.

Here are some of the important features:

- Collectors and brushes are protected by box-type stator yoke from physical damage, dripping moisture, dust and dirt.
- Cast end shields provide rigid bearing support and full protection for motor windings.
- Slip-ring leads are brought out to a terminal box — they are not left exposed.
- Capsule-type sleeve bearings permit inspection or cleaning of motor windings without exposing interior of bearing to dirt.
- Access covers are secured by easy-operating, self-locking fasteners for ready removal.

Get details — Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 05R8183.

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ALLIS-CHALMERS

A-4847

New Farval spray panel lubricates gearing automatically, efficiently, inexpensively

FARVAL—
Studies in Centralized Lubrication
No. 183

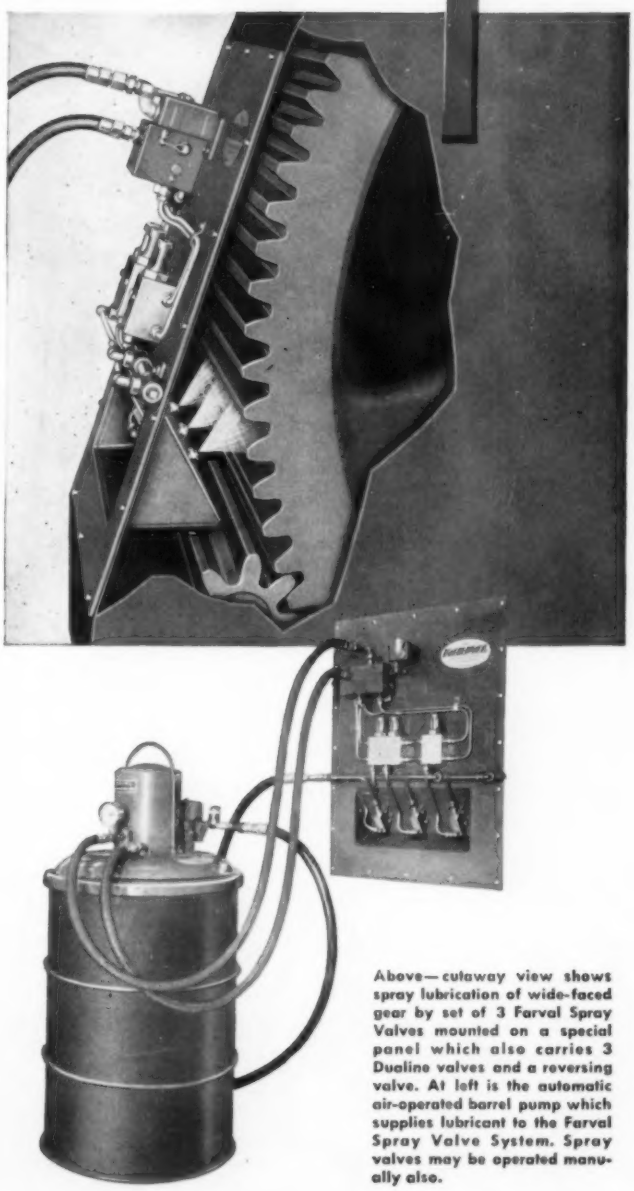
HERE'S how to do a better job of greasing gears and save a lot of lubricant and labor besides. Just install Farval Spray Valves. They can reduce oil and grease consumption and oiling labor as much as 95%. Then you can throw away the oil can and grease bucket, and put your oilers on other constructive work.

Shown at right is a new Farval Spray Valve System developed for large-diameter wide-faced gears. Installed on a panel mounted on the gear housing are Dualine valves, spray valves and reversing valve. An automatic air-operated barrel pump supplies the lubricant.

Farval Spray Valves are completely flexible as to arrangement and operation. They can be used alone or as part of a Dualine System—wherever a supply of compressed air is available. As with standard Dualine valves, the spray can be operated as often or as infrequently as needed to deliver any desired amount of oil or grease, on gears, sliding bearing surfaces or other areas needing lubrication. There is no waste or mess. Quantity of air used is limited to the exact amount required to spray each delivery of oil or grease.

Hundreds of Farval Spray Valve Systems are now in use in many industries. Why not investigate this simple, inexpensive method for your own plant equipment? Tell us the type of gearing or machines for which you would consider automatic spray lubrication. One of our field representatives will be glad to recommend the Farval system best suited to your needs. Write for Bulletin 26-R. The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Ltd.



Above—cutaway view shows spray lubrication of wide-faced gear by set of 3 Farval Spray Valves mounted on a special panel which also carries 3 Dualine valves and a reversing valve. At left is the automatic air-operated barrel pump which supplies lubricant to the Farval Spray Valve System. Spray valves may be operated manually also.

Lighten your maintenance cost load

Even in off-highway service, *Texaco Marfak* gives chassis parts full protection. That's because heavy loads won't squeeze it out, bumpy roads won't pound it out. You get long extra life for all chassis parts because of *Marfak's* longer lasting protection against wear and rust.

In wheel bearings, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in to assure extra thousands of miles between lube jobs, extra long life for bearings, extra safety in braking. No seasonal change is required.

More than 625 million pounds of Texaco Marfak have been sold

Also use: *Texaco Track Roll Lubricant* to reduce maintenance costs of your crawler mechanisms. *Texaco Universal Gear Lubricant EP* to assure smooth functioning transmissions and differentials.

Call on Texaco Lubrication Engineering Service for help in simplifying and improving your maintenance lubrication. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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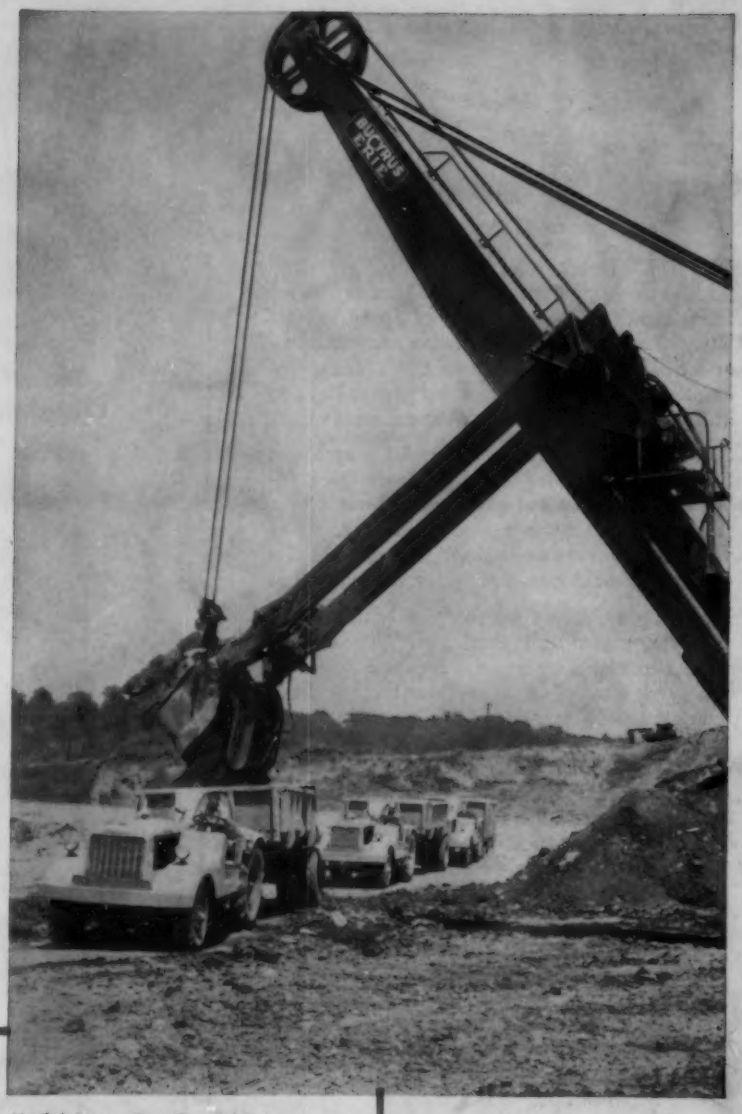

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